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A STUDY OF VOCABULARIES.

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INTRODUCTION.

The succeeding pages are offered as a contribution to our knowledge of the following themes.

1. The extent of a person's vocabulary at various periods, from infancy to maturity. We find in literature widely varying opinions, guesses, and estimates as to the number of words a child knows, or has used, or that grown people in the various walks of life use in conversation, business, or in literature. The facts brought out here in regard to the vocabularies of grammar school and high school pupils and college students are the result of investigations in a hitherto little-worked field.

2. The relation of sex to vocabulary; that is, the problem whether a boy or girl, a man or a woman, knows more words, or has the better command of the language. While many people have some opinion on the subject, it is usually a mere supposition, more often wrong than right.

3. The effect of race, nationality, and climate; or, what the naturalist might term, "geographical distribution;" a fruitful line of investigation for the paidologist or psychologist.

4. The value, or importance, of a good vocabulary. This is discussed in the latter part of the work, together with its relation to successful school work; or, in other words, the correlation between efficiency and the extensiveness of the vocabulary as it relates to school work and public life afterward. Incidentally a discussion arises as to whether we think in words always, chiefly, or not at all.

5. How to secure a good vocabulary. The importance of

this phase of the subject depends upon the value of a good vocabulary. If it is important to have an extensive vocabulary, it is worth while to give attention to the means whereby such a vocabulary may be secured.

The bibliography appended includes the most important works on all phases of the subject herein treated, and a few topics only briefly discussed, but fundamentally related to the investigation undertaken.

VOCABULARIES OF CHILDREN.

TABLE I.

Vocabularies of Children.

Age.	Number of Words, and Reference.											
Month.	No.	Ref.	No.	Ref.	No.	Ref.	No.	Ref.	No.	Ref.	Av,	Notes.
8	1	51									1	a. All references (51) indicate the same child at different ages.
9	1	51	9	107							5	
10	3	51	10	107	3	40b					5·3	
11	12	51									12	b. All references (40) refer to one of three children in the same family at different ages: shown separately in Tables II and III.
12	4	107	8	107	10	40	17	30	20c	107	13·8	
	24	51										
13	22	40	38	51							25	
14	50	40	58	51							54	
15	4	40	60	44	75	40	106	51			61·2	
16	9	40	89	40	199	51					99	c. Exact age uncertain.
17	18	40	35	107	151	40	232	51			109	
18	33	40	74	110	80	44	113	40	144	30	112.8	d. For the record of Viola Olerich, "the baby scholar," see p. 404.
	233	40										
19	83	40	115	30	144	107	281	40			155·7	
20	204	40	374	40							289	
21	177	107	369	40	579	40					375	e. Pres. E. D. Murdaugh.
22	28	107	69	107	377	40	465	40	665	40	320.8	
23	136	107	489	40	612	40	710	40			486.7	f. Estimated.
24	10	101	36	107	50	81	115	42	139	107	455·5	
	173	56	285c	107	397	82	399	56	400c	41		
	483	56	578	42	614	42	729	40	741	40		
	783	40	1050	41	1121	58	d	78				
25	250	107	832	40							541	
26	923	40									923	
27	171	107	1032	40	1079	40					760.2	
28	451	107	667	107							559	
29	1187	40									1187	
30	327	107	480	110	629	41	751	41	769	41	869.8	
	1050	44	1432	40	1519	40						
32	642	88									642	
36	1176	42									1176	
41	839	44									837	
45	1009	44									1009	
60	830	e	1600	42	1600	107					1399·2	
66	1528	88	1529	53							1528·5	
72	960	e	2000	18f							1480	

Table I presents in a condensed form all available previously published statistics as to the vocabularies of children below the school age. In the first column are given the ages in months, and in succeeding columns the number of words used by the child at that period, followed by a reference to the source of the information. The numbers in the column marked Ref. refer to the authorities cited in the bibliography at the close, the last column giving the averages for each age. A further discussion of the data of this table with reference to sex will be found in connection with Tables II and III, pp. 415 and 416.

In Table I the vocabularies of over one hundred children are given, including in some cases references to the same child at different ages. The reader will be struck at once with the very great range at any given age. But this is not so strange as at first appears, when it is remembered that some children can scarcely talk at all at two years of age; in fact, occasionally children of average intelligence scarcely talk before they are three years old. Professor Preyer says that he did not learn to speak till he was nearly three years old. (81.) I have even known of some children of average intelligence that did not talk till they were six or seven years old. Other children have been known to talk before they were eight months old—223d day (51), some even earlier. The table represents the actual number of words used by the children, proper names of persons and places, generally numerals, nursery rhymes, etc., being omitted. The largest number of records were made, as appears in the table, at the age of two years, and the number of words varies from 10 to 1,121, though only three out of the eighteen fall below 100. The average at two years is 455.5. This is probably fully twice as many as most people would suppose. Of the six who talked at twelve months, the average is almost ten words. The average for the five recorded thirty months old is 705.

Laurie in his Lectures on Language (65) estimated, in the first edition, that a child up to the eighth year uses only 150 words; in second edition he says not more than 200 or 300; in the fourth edition he raises his estimate to four or five hundred. (See 53 and 88.) His trebled estimate is still too small by half. Warner (109) says a child's vocabulary (without specifying a definite age) may be very limited, perhaps not over 200 words. This evidently refers to children four, five, or six years old.

Canton (18) states that a child of six years, of average intelligence, may safely be credited with a knowledge of two thousand words. This estimate was based upon a careful study of the vocabulary of a girl about that age, though he does not give the number of words she used. M. C. and H Gale (42)

state that 700 words is a typical vocabulary for a two-year-old child. This is considerably higher than the average shown in Table I.

Kirkpatrick (62) says that the number of words used by children two years old varies from a very few words to a thousand, and that the more usual number is from 200 to 400. This conclusion is based upon a very extensive investigation of the subject; and Table I is in harmony with it.

Preyer (81) studied the vocabularies of nine children. The smallest vocabulary contained fifty words, the largest 1,121 words. The remaining seven children each used from 400 to 500 words.

Viola Olerich, "the famous baby scholar" (78), at two years of age (1 yr. 11 mon. 25 d.) was examined by a committee of school teachers "who found that she knew 2,500 nouns." The committee estimated that she knew at least 500 more nouns, which they could not present as objects or pictures, making a total of 3,000 nouns (p. 33).

Tracy (107) found by testing 5,400 children that the nouns form an average of 60 per cent. of the entire vocabulary. A number of other authors give about the same amount. If Viola Olerich knew 3,000 nouns, and this was 60 per cent. of her vocabulary, the total number of words known would be 5,000. This is probably too large. As she was taught nearly altogether by object lessons the nouns would probably represent much more than 60 per cent. of the entire vocabulary; but even at 75 per cent. she would know 4,000 words, a pretty large number even for a prodigy.

It is very evident that those who have not carefully studied the subject very much underestimate the number of words a child uses, or knows.

In this connection it may be well to call attention to the announcement of a publishing house (B. F. Johnson Publishing Company) to the effect that the first reader of a series they publish contains only 493 words. The first book of the Lee Readers (American Book Company) contains 497 words, exclusive of a few proper names. The average first reader, it will appear, contains practically 500 words. These the pupil of six years is expected to know in addition to the hundreds he knows that are not found in the first reader.

Helen Keller (61), deaf, dumb, and blind, was 6¾ years old when Miss Sullivan took charge of her. For weeks she learned words slowly, then began to learn them very rapidly. After this awaking, in less than a month she knew 100 words; in two months she knew 300 words; in six months, 600 words; in twelve months, 900 words. She was still less than eight years old. But in a year, with all her disadvantages, she had

learned 900 words, a larger number than many people would credit to the child of average intelligence at that age with all its faculties intact.

Robinson Crusoe, according to Kirkpatrick (63), contains not fewer than five or six thousand words; yet, as he says, children of ten to twelve years of age understand it.

Vocabularies of Older People.

Dean Farrar stated, as quoted by Hale (47), that English laborers carry on their conversation with not more than one hundred words. This is a very improbable statement. Max Müller (75) is authority for the statement that an English clergyman (A. D. Orsey) declares that the laborers in his parish did not use over three hundred words.

W. R. Baird (6) gives the number of words of each part of speech needed by a tourist in a foreign country, the total number being 650. This is intended to indicate merely what a traveller can barely get along with, and does not represent the vocabularies of the people among whom he travels.

One of the New York papers made the statement that a business man's vocabulary, that is, the words actually needed for business dealings, includes 3,500 words. With the help of a teacher of commercial branches, I counted the words found in a large number of business letters, pertaining to many kinds of business. We found over three thousand words, yet I could readily call to mind scores of words, especially the names of articles of merchandise, not found in our list from the letters. This number would be sufficient, no doubt, for any one kind of business; but if one includes the names of all the principal articles of commerce, it is necessary to double this number.

Perhaps no estimate of the vocabularies of different classes has been more often quoted than that of George P. Marsh. A few of his errors especially have become current. Some thirty years ago he made the following statements (71), which were in some respects mere guesses. "Few writers or speakers use as many as ten thousand words, ordinary persons of fair intelligence not above three thousand or four thousand. If a scholar were required to name without examination, the authors whose English vocabulary was the largest, he would probably specify the all-embracing Shakespere, and the all-knowing Milton. And yet in all the works of the great dramatist, there occur not more than 15,000 words, in the poems of Milton not above 8,000. The whole number of Egyptian hieroglyphic symbols does not exceed 800, and the entire Italian operatic vocabulary is said to be scarcely more extensive."

In my own investigations I have had my results frequently called in question by this reference to the vocabularies of Shake-

spere and Milton. Even if the statements were correct, few people stop to think how the language has grown in the three hundred years since Shakespere's day, and that it is barely possible some modern writers may have used as many words as he, especially as they have written much more voluminously. Most people have not acquainted themselves with the fact that the year Shakespere died (1616) the first English dictionary was published, and that it contained just 5,080 words. When Milton died, 58 years later, the best English dictionary contained only about 13,000 words. Of course, not all the words had found a place in the dictionaries of that time; but we all know that many thousands of words have been added to the language, and now some of the dictionaries contain over three-hundred thousand words. But these statements of Marsh have been shown to be incorrect, and his estimates very much too low. Dr. Edward S. Holden, who has given much attention to the study of vocabularies, declares (55) that Shakespere used over 24,000 words, basing his opinion on Mrs. Clarke's concordance to Shakespere's works; and that Milton, according to Cleveland's concordance, in his poems alone used 11,-377 words. The results of my own studies of a number of authors, given below, support Holden's views.

1. By counting all the words in D. Barren Bright's Concordance to the entire works of Tennyson, I found a total of 10,574, excluding all proper names not found in the dictionary. Only a few of his minor poems and only a few of his translations are included in this Concordance. Hence this does not include his entire vocabulary.

2. By a similar process, using John Neve's Concordance to the poetical works of Cowper, I found 11,284 words. This Concordance includes only a few of his minor poems, and only a few of his translations. No distinction is made between different parts of speech having the same spelling.

3. In John Bradshaw's Concordance to the poetical works of Milton, there were 12,800 words. This does not include the psalms and translations, or any of his prose works. No distinction is made between parts of speech having the same spelling. This then falls far short of Milton's entire vocabulary. Holden's figures are no doubt more nearly correct. His prose works included with the poetical would add many more words to the list.

4. The Lexical Concordance to the poetical works of Shelley, by F. S. Ellis, includes, according to my counting, 15,959 words.

5. Dr. Edwin S. DuPoncot informs me that he has read all of Victor Hugo's works in the French. He found in Notre Dame, two volumes, over 27,000 words, and estimates that in

all his works there are 38,000 words. He arrived at these results by counting the words in the vocabularies appended to each work.

These numbers are not incredibly large. If we had a list of the words used by Dickens, Scott, and other voluminous writers, we should no doubt reach similar results.

Holden many years ago made careful tests upon his own vocabulary, using Webster's Unabridged Dictionary (Edition of 1852) to determine how many words he knew. As a result of his count he found he knew 33,456 words. But as that old edition of Webster contained little more than a third as many words as the best dictionaries of the present, and certainly did not contain all the words he knew, his estimate could be safely doubled. Holden further shows (55) that certain men of science know more than 25,000 names of animals or plants; and quotes Dr. Asa Gray, the botanist, and Dr. Theo. Gill, the zoologist, in support of his contention. The New York *Times*, as quoted by the *Pathfinder*, Jan. 4, 1900, states that Rufus Choate used 11,700 words.

E. A. Kirkpatrick (63) found his own vocabulary to consist of nearly 70,000 words, as counted by the dictionary. He further says that to read ordinary general reading one needs to understand from six to ten thousand words. He estimates that a citizen of the United States having a common school education would know 10,000 words; a well-read college graduate and those who have pursued a university course, would know from 20,000 to 100,000 words.

Several different authors agree in the statement that the vocabularies of intelligent, cultured people, especially of literary taste, contain from 25,000 to 30,000 words. Whitney (111) puts it at 30,000. Some people know many more than this, as I show by my own investigations on succeeding pages.

It is generally believed that the American Indians, and various other tribes and races of people ranking as uncivilized or partly civilized, have very limited vocabularies.

Chamberlain (20) is authority for the following statements as to the number of words in the vocabularies of the primitive tribes named, basing his statements upon the dictionaries of Indian languages here included:

Navaho (Mathews, 1891), 10,000.
Cree (Vegreville, 1865-1879), 17,000.
Montagnais (Végréville, 1891), 18,000.
Dakota (Riggs, 1852-188–), 20,000.
Cegiha (Dorsey, 188–), 20,000.
Blackfoot (Maclean, 1887), 25,000.
Tuskarora (Hewitt, 1886), 30,000.
Micmac (Rand, 1849-94), 30,000.
Yahgan (Bridges, 188–), 40,000.

Since, as the authors admit, these dictionaries are very incomplete, these estimates, Chamberlain says, are probably too small.

Dr. D. G. Brinton, a very high authority, says (11) the Mexican vocabulary of Molina contains about 13,000 words, and the Maya vocabulary of the convent of Motul has over 20,000. Yet these results are taken from old and very incomplete dictionaries.

A. G. Morice (74) in his studies of Déné languages, says the Carrier tribe vocabulary contains 150,000 verbal terms.

Dr. William T. Harris (52) says "the Chinese alphabet having a separate sign for each word, has to be mastered by an enormous effort of the memory, and that ten thousand of these characters are necessary for graduating as a scribe."

Results of my Own Tests.

Having brought together in this brief and even fragmentary manner the conclusions reached by numerous other writers as a result of guesses, estimates, tests, and accurate counts, I wish to put on record the results of the investigations I have made during the last ten years. My work has been mainly upon a class of persons not even referred to by any of the authors previously cited; namely, students in schools and colleges. In fact, I have not seen a single reference to any investigations of this kind.[1] My effort has been to ascertain, not the number of words that have actually been used in oral or written speech, but the number of words the persons knew or could use intelligently. Hereafter the word vocabulary will be used exclusively in this sense, unless otherwise stated. And my results have been attained in every case by written or oral definitions. As far as they go they are accurate and reliable, though certain estimates and calculations have been based upon the work done, in which the element of uncertainty may enter; but they are not mere guesses. This explanation seems necessary, since some of the results are a little startling to those who have not looked into the matter.

As there seems to be some confusion in vocabulary tests as to what constitutes a word, let it be understood I have followed the dictionaries in this respect. I have counted what they have counted, and I have included what they have included. For example, the same word as to its spelling, may occur under two or three parts of speech. The pronunciation of the verb and noun is often different as in *record*, *survey*, *perfume*, etc., and the meaning is often very different. In all cases I have included all proper names included in the dictionary and rejected all others. It seems necessary to have some standard in this respect, and it has seemed best to me to follow the dic-

[1] See reference to later papers, p. 432.

tionary implicitly. If other writers will do the same, some ambiguity and confusion may be avoided in future. My later investigations have all been based upon the Century and the Standard dictionaries. Some of the earlier tests were based upon Webster's International, the Academic, or the High-School editions. My results as to the extent of vocabularies are based upon oral or written definitions, generally of from one thousand to several thousand words. Some conclusions as to the differences with regard to sex were based upon a much smaller number. All class tests were written. I selected all the words on each page, except such unusual words as none would know, and selected the pages either at random, or more often, in a certain order, as every twenty-fifth or fiftieth page. In some cases, especially in the public schools, these tests were carried out by the aid of teachers in charge; yet in every case such tests were written, and the papers graded by me. The tests were mainly given in classes of from ten to thirty, and averages for the class given; but a number of private oral tests were also given of one person at a time.

Class Tests.

1.[1] In a village public school, Edmond, Oklahoma, the pupils of the 6th, 7th, and 8th grades were tested carefully with the following results for each class:

Grade of class.	Age. Yr.	Mon.	No. in class.	No. of[2] Tests.	Words defined.
6th,	13	1	10	132	4,192
7th,	13	4	11	111	5,849
8th,	12	10	12	164	7,937

The 8th grade, it will be noted, averaged younger than the 7th, though they knew many more words. None of these grades, perhaps, were up to the standard of city schools. "Words defined" in the table signifies the average number each member of the class could define.

2. In a village school in Arkansas the following results were obtained.

Grade of class.	No. in class.	Age. Yr.	Mon.	Words defined.
6th,	7	13	4	11,634
7th,	14	14	9	13,675
8th,	20	16	5	17,138
9th,	13	17	8	18,865

It will be seen that the pupils of this school are much older

[1] The numbers prefixed to tests do not indicate the order in which the tests were made, but are simply for reference.

[2] The number of tests is found by adding all the tests taken by every member of the class.

than those of like grade in test No. 1, and they were also graded a little more rigidly; that is, pupils of corresponding grades in No. 2, had really done more work. In test No. 1 a small school dictionary was used; in No. 2, Webster's International. In the second case the tests were given at intervals for two or three months, and the pupils had frequent drills in defining in connection with spelling lessons. These things account in part for the fact that in one school the vocabularies averaged more than twice as large as in the other.

3. The Oklahoma Normal School at Edmond, had a five-year course of study. Tests were given for several weeks to all my classes in connection with their English work, and nearly all the students in the school were tested. I neglected getting the ages, as this was the first test made. The pupils from the first-year class were largely from the country and village schools, and scarcely ranked with the first-year high school pupils generally, though they were older.

Class.[1]	Words defined.
1st year.	11,700
2d year,	15,400
Junior,	15,750
Middle,	19,400
Senior,	21,500

In these results certain small allowances are made for possible errors, and the records are given approximately. The first-year students in this test are scarcely better than 6th year public school pupils in No. 2, though they were considerably older. This is partly due to the fact also that, as in test No. 1 a small school dictionary was used—Webster's High School dictionary. The records of second-year, Middle, and Senior are especially good.

Individual Tests.

Having abandoned the class work, except for a comparison of the sexes,[2] I have made a great many private oral tests;[3] that is, definitions were given orally and included from five hundred to five thousand words each. The result was arrived at, as in class records, by multiplying the average number of words defined on each page by the whole number of pages in the dictionary.

4. A little girl in Oklahoma, two years old, was observed

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[1] In this test, made ten years ago, I have retained only brief summaries, and neglected to record the number in each class, but give the average number of words defined by each pupil for what it may be worth.

[2] See pp. 414-426.

[3] I formed the acquaintance of a parrot that could speak 59 words. Gardner says that apes have a vocabulary of 25 or 30 words.

for about two weeks and her words noted by members of the family. They recorded only 161 words. It is not certain that this included all the words she had used. As I knew the child well, I felt sure her vocabulary was less than 200 words, as she did not talk very well.

5. Pearl Beale, a little girl almost five years old (59 months), knew on 100 pages of the Student's Standard Dictionary 171 words, an average of 1.71 words to the page. This, multiplied by 814, the number of pages in the book, gives 1,391 words. While a very intelligent girl, her opportunities for securing a large vocabulary had not been good. She spoke German, but I did not test her German vocabulary.

6. Foster Brown, a boy nine years old, tested in the same way, apparently knew 6,031 words. He was an unusually bright boy in many respects, and had an excellent command of language in conversation; but he had not been to school much, and was in the third grade.

7. My own boy, Edwin B. Doran, at ten years of age could define at least 10,000 words. He had read a good many books, and associated largely with older people. When he was thirteen years old, having read at least a hundred books, and having had one year of Latin and considerable practice in vocabulary work, he could define about 18,000 words. This statement may appear incredible to some, but it is based upon extensive and careful tests.

8. A young lady 19 years old, who had not quite finished the literary course in a young lady's seminary, tested by the use of the Student's Standard Dictionary, apparently knew 20,537 words. But with one of the large dictionaries the result would have been much higher.

9. A physician, in Little Rock, Ark., 30 years old, who had not taken a college course, other than his medical course, tested with the International Dictionary, knew 57,154 words.

Some tests have been made on the students of the James Millikin University. While most of the tests were made by classes to determine the effect of sex upon vocabulary, the following five were private tests more extensive than the others. The Standard Dictionary was used.[1]

10. Miss Alice Finfrock, second-year Academy, 23,100 words.

11. Miss Augustine Southworth, third-year Academy, 26,600 words.

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[1]By the kindness of President A. R. Taylor, I had opportunity to test, in addition to members of my own classes, representative students and classes from all departments of the university, though for lack of time I did not make as complete an investigation as I wished.

12. Mr. Paul S. Welch, fourth-year Academy, 41,895 words.

13. Mr. E. J. Witzemann, Junior, college, 40,681 words.

14. Mr. E. A. Meserve, Junior, college, 53,130.

Most of these, perhaps all of them, ranked above the average of the class, as far as I was able to test the members of the class. These all took other tests in class, the results of which are not included in these records. Mr. Welch's record is especially good, as he is still in the academy department. Mr. Meserve so far, heads the list. Probably few, if any, in the university could surpass him. But Miss Finfrock's record, considering the fact that she is only 14 years old, is remarkably good. These five had nearly the same list of words, some more than others. The largest number of words given was about 4,000. A further discussion of these results will be found in the latter part of this paper.

The following are recent individual tests made upon young people in Jackson, Miss. The figures given are estimates based upon a list of nearly two thousand words. All had the same words, except that a few missed some of the tests.

Name.	Age. yr.	m.	Words.
Sallie Ligon,	14	8	11,340
Emily Harper,	11	9	12,516
Mollie Smith,	15	8	14,595
Elain Ward,	13	3	18,753
Osborn Young,	12	8	22,722
Archie Owen,	13	3	26,376
Minter Gant,	12	9	28,480

These results, especially for the last three, are very high. These three boys have very remarkable vocabularies, ranking with advanced college students whom I have tested on some of the same words.

15. The best vocabulary I have ever found, so far as any extensive test has been made, is that of Miss Rosa Rhee Kevil (now Mrs. A. F. Crider, whose husband is State geologist of Mississippi). She spent some months in Decatur last fall and I had opportunity to make a very full and careful test. The result of the test showed she could define 92,161 words. A careful test was made on three different occasions. While there was considerable variation from page to page as to the number of words defined, yet taking the results of each test separately the averages were almost the same, varying less than half of one per cent. As in perhaps every test given, the record of the first part of the test was the lowest.

16. It will not be amiss, I trust, for me to put on record some tests upon my own vocabulary, as several other writers have done. Ten years ago, when I first became interested in

the subject, I made a pretty extensive test of my own knowledge of words, using the Century Dictionary. The result of the test showed I could define about 84,000 words. But I feel sure I have outgrown that. I noticed especially in Miss Kevil's test that I could define many words she could not. Hence I feel that I am not immodest in estimating my vocabulary at 100,000 words. Though the test with the dictionary did not show this, it is borne out by the fact that I know thousands of words not found in any one dictionary. For a number of years I have been making a study of the common, or vernacular, names of animals, especially of Vertebrates and Insects. In this study it is necessary to know both the technical and the vernacular names. By a careful consultation of the dictionaries with reference to all these names, I believe I know four or five thousand technical and vernacular names in Zoölogy alone which are not found in any dictionary. Botany and other sciences add many more to the list.

17. But I wish to put on record another case, in some respects the most remarkable of all. My friend, Edwin S. DuPoncot, Ph. D., of the Utah State Normal School, is a comparatively young man, but a language expert. He has a working knowledge of more than twenty languages. He has given a good deal of attention to the number of words in the various languages, and to his vocabulary in each. At my request he has furnished the following estimates of the number of words he knows in the several languages:

English,	70,000	Portuguese,	15,000	Danish,	3,000
French,	50,000	Old French,	10,000	Sanskrit,	2,000
German,	45,000	Greek,	10,000	Anglo-Saxon,	2,000
Spanish,	35,000	Old H. Ger.,	5,000	Hebrew,	1,000
Italian,	25,000	Norwegian,	3,000	All others,	3,000
Latin,	20,000	Swedish,	3,000		
				Total,	302,000

These estimates seem most remarkable, and to some, no doubt, incredible. It does not at first seem possible that any one man could know 300,000 words. But since Dr. Du Poncot speaks some of the modern languages as fluently as he speaks English, though born in the United States, it is not strange that his vocabularies in those languages should be almost as large as his English vocabulary. For example, he has won no little renown in lecturing in Spanish to Spanish-speaking people. His estimate of his English vocabulary is certainly not unreasonable.

We often see the statement that the modern languages in general have a much smaller number of words than English; but Dr. R. J. Kellogg, head of the modern language department of the James Millikin University, recently informed me that in his opinion such languages as the French, the German,

and the Spanish have practically as many words as the English; for there is scarcely a word in English that does not have its equivalent in those languages, and every thought of an Englishman may be expressed by a German, a Frenchman, or a Spaniard.

But we should remember that the 300,000 words noted do not represent as many different ideas, since many of them are mere translations of the same word, though often, of course, with some variation in meaning. At any rate, this is a very remarkable vocabulary.

In a recent article in the Popular Science Monthly (5 a), Prof. E. H. Babbitt gives the following estimate of his own vocabulary, counting all compounds given in the dictionary:

English,	65,000	Italian,	22,000	Old Norse,	11,000
German,	58,000	Latin,	18,000		
Danish,	52,000	Spanish,	16,000	Total,	285,000
French,	30,000	Greek,	13,000		

He says these may be reduced to twenty or thirty thousand actual roots.

The Relation of Sex to Vocabulary.

We may now look at the matter from an altogether different point of view. In recent years a number of works have appeared on the mental and physical characteristics of the sexes. Ellis (33), Thompson (101 a), Thorndike (105), and a number of others, have enumerated hundreds of differences between the sexes in the various stages of maturity. But few publications have appeared as to the differences in the sexes in regard to vocabularies; in fact, almost nothing except the studies of concepts of children; and most authors who have written on the vocabularies of children have laid little stress upon the subject of sex, and in many cases the sex was not even given, the word child being used. The following pages are offered as in some sense supplying this gap in our knowledge of sex.

I have asked many people their opinion as to which sex has the better vocabulary. In nearly every case the female is credited with a more extensive vocabulary than the male. But the results of my studies are not very favorable to this opinion.

Reworking the material in Table I (page 402), I have presented the records of each sex separately, as far as the sexes are known; in Table II (p. 415), the boys' vocabularies, and in Table III (p. 416), the girls' vocabularies. These two tables give 48 records of the boys and 63 records of the girls, ages ranging from 8 months to 72 months. The average number of words for the 48 boys is 531.4; for the 63 girls, 404.3. This seems to favor the boys, but considering the ages, we find the boys average 27 months; the girls, 23 months. Hence the

boys average four months older. Ten of the girls, or 15.8 per cent., are over 24 months old, while 20 of the boys, or 41.6 per cent., are over 24 months old. There are only two or three periods in which there are enough of each to enable one to arrive at any definite conclusion. At the age of 24 months, there are eight boys with an average of 367.2 words and 16 girls with an average of 573.1 words, thus giving the girls an excess of 206 words, or 56.1 per cent. At 30 months there are five boys with an average of 838 words, and three girls with an average of 1,109.3 words, an excess of 30.9 per cent. As there are so few of any age except 24 months, about all we are warranted in saying is that at that age the girls studied have an excess of more than 50 per cent. over the boys. The 10 boys also aged 25 to 30 months averaged 887 words, while the 7

TABLE II.

Vocabularies of Boys. (*48.*)

Age.	Number of Words, and References.											
Months.	No.	Ref.	No.	Ref.	No.	Ref.	No.	Ref.	No.	Ref.	Ave.	Notes.
8	1	51a									51	a. Ref. (51) in this table refers to the same boy at different ages.
9	1	51									1	
10	3	51									3	
11	12	51									12	
12	4	107	8	107	20b	107	24	51	17	30	14.6	b. Age uncertain.
13	38	51									38	
14	58	51									58	c. Ref. (40) in this table indicates the same boy at different ages.
15	106	51									106	
16	199	51									199	
17	232	51									232	
18	113	40c	60	3a							86.5	d. Same boy at different ages. Noted also in (20) and (53).
19	115	30	144	107							129.5	
22	377	40									377	e. Pres. E. D. Murdaugh.
23	489	40									489	
24–	50	82	115	42	139	107	173	42	285	107	367.2	
	397	82			729	40	1050	41				
25	832	40									832	
26	923	40									923	
27	1079	40									1079	
28	667	107	1101	40							884	
29	1187	40									1187	
30	327	107	480	110	751	41	1432	40	1200	3a	838	
32	642	88d									642	
41	837	44									837	
45	1009	44									1009	
60	830	e	1600	44	1600	107	1567	44			1399.2	
66	1528	88d									1528	
72	960	e									960	
Av. 27											531.4	

TABLE III.

Vocabularies of Girls. (*63.*)

Age.	Number of Words and References.											
Mos.	No.	Ref.	No.	Ref.	No.	Ref.	No.	Ref.	No.	Ref.	Ave.	Notes.
10	3	40									3	
12	10	40	1	3a							5.5	
13	22	40									22	
14	10	100	50	40							30	
15	4	40a	60	44	65	92	75	40			51	(40) refers to the first girl and (40a) to the second girl at different ages.
16	9	40a	89	40	75	3a					54.3	
17	18	40a	35	107	151	40	348	92			138	
18	74	120	33	40a	80	44	144	30	233	40	112.8	
19	83	40a	281	40							132	b. Lowest of 8 girls
20	204	40a	374	40							289	
21	177	107	369	40a	579	40	758	92			470.7	c. Same girl at different ages.
22	28	107	69	107	465	40a	665	40			306.7	
23	136	107	612	40a	710	40					486	d. Same girl at different ages.
24	36	107	173b	81	263	107	399	56	399	81	573.1	
	400c	41	486	56	487	81	500	44	578	42		e. Same girl at different ages.
	614d	42	1121	58			1176d	42	1212	3a		
	741	40a	783	40								f. Estimated.
25	250	107									250	
27	171	107	1032	40a							601.5	
28	451	107									451	
30	769c	41	1050	26	1509	40a					1109.3	
32	642e	53									642	
66	1529e	53									1529	
72	2000f	18									2000	
Av. 23											404.3	Av.

girls for the same period averaged 747 words; and the 19 boys over 24 months averaged 1,022 words, while the 10 girls for the same period averaged 940 words. But the 3 girls over 30 months averaged 1,390, and the 9 boys over 30 months averaged only 1,175 words. Hence, without further information, we are not warranted in saying which has the better vocabulary after the 24th month, though it is probable that further investigation will show the girls surpass the boys up to the fifth or sixth year.

Reconsidering class test No. 1, p. 409, the Edmond, Okla., public school, and arranging as to sexes, the following results are obtained :

Grade.	No. pupils.	Age.	No tests.	Words.
		BOYS.		
6th,	5	12 9	66	4,783
7th,	6	13 1	66	6,553
8th,	2	12 0	28	8,210
		GIRLS.		
6th,	5	13 4	66	3,985
7th,	4	13 7	45	5,745
8th,	10	13 8	136	7,736

COMPARISON.

6th, boys	5	months	younger,	knew	798	more	words.		
8th, "	6	"	"	"	808	"	"		
8th, "	20	"	"	"	574	"	"		

These results are rather remarkable. Though the boys averaged more than 10 months younger, they knew 11.9 per cent. more words. The boys of the 8th grade (only two) were younger than any other class, but they knew more than twice as many words as the girls of the 6th grade, who were 20 months older.

19. Reworking the material of the Arkansas public school (No. 2, p. 409) the following are the results as to the sexes:

6th grade, girls	9	months	older,	defined	11	per cent.	more	words.			
7th " "	1	"	younger,	"	16	"	"	"	"		
8th " "	16	"	"	"	24	"	"	"	"		
9th " "	21	"	"	"	18	"	"	"	"		
All " "	3	"	"	"	18	"	"	"	"		

This test seems as conclusive in favor of the girls as the last was in favor of the boys. The test includes 44 girls and 22 boys. The girls were very much better students than the boys.

20. Returning to the test of the students of the Oklahoma Normal School (No. 3, p. 410) I present the following comparison of the sexes.[1]

First-year	boys	knew	4	per cent.	more	words.	
Second-year,	"	"	11	"	"	"	"
Junior,	"	"	21	"	"	"	"
Middle,	"	"	20	"	"	"	"
Senior,	"	"	½	"	"	"	"
All classes	"	"	11	"	"	"	"

This seems very conclusive in favor of the young men. The senior class had only two young men and four young ladies. The other classes were much larger.

The results of other tests are given in more condensed form.

21. About 50 students, nearly equally divided as to sex, in the Kansas Normal School, at Fort Scott, were tested. The young men averaged 2 months younger, and knew 10 per cent. more words.

22. In the Clinton Normal School, Clinton, Mo., about 20 students of each sex were tested. The young men averaged 14 months younger, but knew 7 per cent. more words.

In Kay County, Oklahoma, Summer Normal, lasting four weeks, tests were made upon two classes of teachers (a first-grade class and a second-grade class), about 25 teachers in each class, with the following results:

23. First-grade teachers, 6 male, 20 female; the young men were *4 years* younger, but knew 11 per cent. more words.

[1] In this and a number of the following tests the actual ages were not obtained.

24. Second-grade teachers, 5 male, 20 female; the young men were 2.6 years *older*, and knew *30 per cent.* more words.

25. In the Oklahoma County, Okla., Summer Normal, lasting four weeks, a test was made on 72 teachers, 26 male, 46 female. The young men knew 26 per cent. more words.

26. A rather limited test was made upon a dozen students of the Century Normal College, Ky. The girls were 10 months younger and knew 5 per cent. more words.

27. In McEwen College, Tenn., 14 students of the same class were tested, 8 boys, 6 girls; the girls knew 10 per cent. more words. In another class of 7 girls and 2 boys, the girls knew about 50 per cent. more words. The boys were behind the class, but about the same age.

Recent tests were made upon the students of the James Millikin University; but the results were not very satisfactory, because the tests were too few, and not many students were reached in some classes. However, as there was no time for further tests, I present this, as in some respects the most unsatisfactory of the records made in this paper. An eight-year curriculum is provided; four years in the academy, and four years in the college. As far as possible I give the results of each class, showing the per cent. of excess one sex had over the other.

28. First-year Academy, the young men knew *89* per cent. more words than the young ladies; only one-third as many young ladies took the tests.

29. Second-year Academy, the young men knew 30 per cent. more words.

30. Third-year Academy, the young ladies knew 29 per cent. more words.

31. Fourth-year Academy, only one young lady took the test, but she made a lower record than the lowest among the young men, and they averaged 50 per cent. higher than her record.

32. Freshman class, the young ladies average 13 per cent. higher; but nearly twice as many ladies took the test.

33. Sophomore class, about four times as many young ladies as young men took the test. The young ladies averaged one-fourth of one per cent. better.

34. Only a few juniors of either sex were examined, but the young men averaged 21 per cent. higher.

35. Only three seniors took any of the tests, hence no value can be attached to the results. The one young lady did a little better than the average of the two young men.

The honors seem nearly equally divided. In five of the classes the young men were ahead, in the others the young ladies made the better record. But some of these records are

nearly valueless, as stated above, because so few tests were given, and so few took some of the tests. Putting all classes together, the results are more satisfactory, as that makes eight times as many tests, or eight times as many students in the tests, as the average for each class. Summed up in this way, the young men of all classes averaged 11 per cent. higher than the young ladies. Then taking the average advancement of all the students, the young men averaged 3.3 years in school, the young ladies 4.2 years. This shows, therefore, the young ladies tested were nearly a year more advanced than the young men; yet the young men made, on the whole, decidedly the better record. Moreover, it happened, I believe in every test, taking all the young men together of all grades, and the young ladies of all grades, the young men made the better record. This is significant as being based upon the same list of words.

A series of tests were made upon the children of the Jackson, Miss., public schools. Supt. E. L. Bailey and several of the teachers very kindly aided in carrying out the investigations. My work was confined to the fourth, fifth, sixth, and seventh grades of white schools, and sixth, seventh, and eighth grades of colored schools. These are the only tests, as far as I know, that have ever been made upon children in the negro schools. I hope to extend these investigations to other negro schools, but not in time to include the results in this paper.

A list of twenty words was submitted to the pupils in all these rooms on the same day, under the direction of the teachers; the meanings of these words were written. The papers were graded by myself on a scale of 100 per cent.; that is, each correct answer was marked 5, and partially correct answers from 4 to 1.

In order to verify certain results, especially in the colored schools, a second list of twenty words was submitted to all the rooms before tested in the negro schools, and to the sixth grade in the white schools. This list, taken from a magazine, consisted of seven nouns, five verbs, four adjectives, and four adverbs, and the pupils were required to define them in accordance with the parts of speech. As the records of the two tests were essentially alike, they are combined in the results here given. The ages were taken in years and months.

In some of my earliest tests, several years ago, only correct answers were marked, while a little later credit was given for partly correct answers, though not so fully as in these tests.

36. White schools, first test.

4th Grade, 16 boys and 17 girls; the girls were 4 months older, and knew 15.8 per cent. more words.

5th Grade (a), 16 boys and 16 girls; the boys were 4.2 months older, and knew 4.1 per cent. more words.

5th Grade (b), 6 boys and 12 girls; the boys were 9.5 months older, and knew 4.9 per cent. more words.

6th Grade, 29 boys and 12 girls; the girls were 1.5 months younger, and knew 3/10 per cent. more words.

7th Grade, 18 boys and 25 girls; the girls were .5 months younger, and knew 14.1 per cent. more words. Averaging, the boys were 8 months older, and knew 3.5 per cent. more words. The average includes 16 girls, 6th grade, in another room, making a total of 85 boys and 98 girls.

37. Colored schools, first test.

6th Grade, 8 boys and 16 girls; the boys were 8.5 months younger, and knew 1.3 per cent. more words.

7th Grade, 3 boys and 14 girls; the boys were 9.5 months older, and knew 4 per cent. more words.

8th Grade, 8 boys and 5 girls; the girls were 13.6 months older, and knew 3.2 per cent. more words.

Averaging, 19 boys and 35 girls; the boys were 2.3 months younger, and knew 3.7 more words.

Averaging, white and colored, 104 boys and 132 girls; the boys were 8 months younger, and knew 5.8 per cent. more words.

38. A summary of both tests combined.

White schools, 114 boys, 109 girls.

The boys averaged 2.2 months younger, and knew 5.8 per cent. more words.

39. Colored schools, 39 boys, 76 girls (both tests combined).

The boys were 11.5 months younger, and knew .3 per cent. more words.

A comparison of the vocabularies of the white and negro children would no doubt be of considerable interest, but I find some people object to any comparison of this kind. On the same principle, of course, one could object to a comparison between native and foreign-born children, or Southern and Northern children. I have no sentiment, nor even any opinion, to express in the matter; I present a few facts, the result of my investigations.

But as the tests were not applied to corresponding grades entirely in the two schools (4th to 7th in the white, and 6th to 8th in the colored), I shall compare only the 6th and 7th grades of each, giving averages.

40. The 137 white children, both sexes, were 13 years and 2.5 months old, and defined 85 per cent. of the words; the 85 negro children, both sexes, were 14 years and 10 months old, and defined 83.5 per cent. of the words; or, the white children of the two grades were 19.5 months younger, and knew 1.8 per cent. more words.

Probably few people would expect the negro children to

make so good a record. While they average nearly two years older, Supt. E. L. Bailey informs me the grades in the two schools do not correspond exactly; that is, the 6th grade in the white schools is a little more advanced than the 6th grade in the negro school. But this only adds to our surprise that the vocabularies of the negro children are so high. It should be stated, however, that the pupils in the colored schools had been drilled upon definitions, especially on prefixes and suffixes, and this particular school, without doubt, ranks above the average negro school even in the cities of the south.

The 6th grade in the white school, in charge of Miss Duling, had also had special drills of the same kind, and made a remarkably high record, the highest of any corresponding grade I have ever tested, and considerably higher than the 7th grade in the Jackson school.

41. I present lastly a study of the vocabularies of 139 pupils in the negro schools of Meridian, Miss.[1] The second list of twenty words submitted in the Jackson public schools was used with these pupils, so that the results of the same grades are readily comparable. I give a brief summary of each class.

3d grade, 18 boys and 27 girls: the girls were 9.6 months younger, and defined 10.6 per cent. more words.

4th grade, 11 boys and 29 girls: the girls were 5.1 months younger, and defined 6.8 per cent. more words.

5th grade, 4 boys and 19 girls: the girls were 16 months older, and defined 8.5 per cent. more words.

6th grade, 7 boys and 24 girls: the girls were 8.3 months younger, and defined ¼ per cent. more words.

Combining all grades, we get the following results: 40 boys were 12 years 8.9 months old, and defined 47.9 per cent. of the words. 99 girls were 12 years and 4.9 months old and defined 60.2 per cent. of the words. In all grades, therefore, the girls were four months younger, and defined 25.7 per cent. more words. This large per cent. in favor of the girls over the boys is partly due to the fact that the boys were more numerrous in the lower grades.

Comparing the Jackson and Meridian negro schools, the records are not greatly different.

6th grade, the only one that permits comparison, 6 Jackson boys were 14 years, 6.5 months old, and defined 77.8 words. 7 Meridian boys were 14 years 5.1 month old, and defined 81.3 words. The 11 Jackson girls of this grade were 12 years 3.8 months old, and defined 99 per cent. of the words; while the 24 Meridian girls were 13 years 8.8 months old, and defined

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[1] I wish to acknowledge the aid of Supt. J. C. Fant in making this test.

81.5 per cent. of the words. The Jackson girls were 17 months younger than the Meridian girls, yet defined 22 per cent. more words.

Summary of Sex Tests.

The reader by this time is no doubt very much "at sea," and nothing definite seems to have been arrived at. But by recalling all the facts in the case three very definite and rather surprising facts are brought out.

First, it is very probable from all information at hand that up to the fourth or fifth year the girls know or use more words than the boys.

But what can we say of all subsequent ages or classes? In the majority of cases the boys knew more words than the girls.

Reviewing tests Nos. 18 to 40, it will be seen examinations have been made in 11 schools (including teachers' summer normals), and all together 34 classes have been tested separately, if we include some of the very incomplete tests in the James Millikin University. Of the eleven schools tested as to sex, males made the higher record in eight of them. Considering the 34 classes, males made the better record in 22, in addition to the fact that in the Jackson schools the boys made the highest total averages in the white schools, negro schools, and white and negro combined.

Considering the geographical distribution of the schools, it will appear that seven of the eight schools in which males made the better record are in the North, except those in Oklahoma, which is really more northern than southern as to population; that is, many more of its settlers come from tbe north than from the south. Note again that all those schools, except one, in which the young ladies made the better record are in the South. From all my observations and tests, from an extensive experience as a teacher both north and south, I feel warranted, therefore, in drawing two more conclusions:

Second, in northern schools the male students in the same classes or of the same age know more words than the female students.

Third, in southern schools the female students in the same class or of the same age generally know more words than the male students. This is not true in the Jackson schools, which is the only exception I have found.

Several other incomplete tests, the data from which are not included in this report, tend to a confirmation of these very unexpected results.

In this connection the careful and extended experiments of Dr. G. Stanley Hall (49), to determine the contents of children's minds on entering school, are especially interesting. Of

the various concepts upon which the children were tested he found that the boys knew more of three-fourths of the concepts than the girls.

The easy and widely diffused concepts are commonest among the girls, the harder and more special or exceptional ones are commonest among boys. The girls clearly excelled in, name and calling of father, thunder-shower, oak, dew, Botanical Garden, rainbow, hail, potato-field, moon, square, circle, and a few others. The girls also excelled in fairy tales, while the boys excelled in religious concepts. In the Boston schools he found the girls excelled in knowledge of the parts of the body, home, and family; and that their stories were more imaginative. But their power to sing and articulate correctly from dictation was distinctly less than that of the boys, as well as their acquaintance with numbers.

The author gives in this discussion the experiments of Dr. K. Lange on 500 city children and 300 country children. The girls had seen, heard, and experienced less of sixteen out of seventeen subjects.

In the Kansas City schools the boys knew more of 34 questions out of 49 than the girls. The Irish children were behind the American children, but the Irish girls decidedly outrank the Irish boys.

He gives also the tests at Annaberg schools by Hartman on 660 boys and 652 girls with 100 questions; ages $5\frac{3}{4}$ to $6\frac{3}{4}$ years. The girls excelled in 56 questions, the boys in 38. The girls also excelled the boys in marks the first three years. The sixth year the boys were distinctly ahead.

Monroe (61) in testing the perception of school children secured results which seem to differ somewhat from the results just recorded. He submitted cancelled two-cent postage-stamps to 2,191 children, directing them to write an account of the stamp. Returns were made by 985 boys and 1,206 girls, ages ranging from 7 to 17 years. The following are his conclusions:

"Sex differences are the most marked feature of the study. It will be noted that in all the essential lines of observation the girls lead the boys; they not only tell more about the stamp, but in many instances their observation shows a higher order of intellectual discrimination. They seem to surpass the boys in their knowledge of the postage stamp; and they certainly surpass the boys in their ability to tell what they know about the stamp."

Professor Barnes asks in this connection, "Does this apparent superiority of the girls mean that they are better observers than the boys, more studious than the boys, or have better powers of expression than the boys?"

Unfortunately we are not informed as to average age of the

boys and girls. It is possible the girls were older and more advanced than the boys. We cannot assume they were of the same age, or that equal or proportionate numbers of each were taken from the same classes. In nearly all my tests the girls averaged older than the boys.

Chambers sent out to the teachers of Minnesota, to be submitted to their pupils, the following words: monk, peasant, emperor, armor, nation, school. (The same words used by Prof. Earl Barnes (8) in England and the Eastern States.) He got papers from 2,922 pupils; ages, 6 to 18; boys, 1,365; girls, 1,567; American born, boys 419, girls 494; foreign born, boys 946; girls 1,063. The author says that as to sex the girls excel the boys both as to correct and partially correct answers, and adds: "Is not this what we should expect? Girls are everywhere more attentive to details and distinctions than are boys. The common interests of their lives centre more about little things," etc.

This is not what I have been led to expect for pupils of all ages, as is shown by the results of most of my tests. However, it is worthy of note that 68.7 per cent. of the pupils were foreign born, and as it is shown in the Kansas City schools (26) that the Irish girls, that is, those of Irish parentage in most cases, were decidedly superior to the Irish boys of the same age, this may be true of other foreigners; and as there were more than twice as many of foreign birth as of American birth, the foreigners would easily control the results as to sex, and decide the test in favor of the girls. It would be interesting to know the results of each class, foreign and native, separately as to sex.

The American children of Minnesota were like the American children of Kansas City, decidedly superior to the foreign in the tests made. The author says: "It is altogether probable that this difference is due less to race characteristics than to home customs. Studies of children's vocabularies prior to school age show clearly that children of cultured American parents use correctly a much larger number of words than children of American parents of less culture." It is pointed out that the investigations of Miss Dismorr, in London, in schools attended by children of laborers and small shop-keepers and schools attended by children of the middle classes showed that the children of the latter were far superior in their knowledge of words.

All these results except the last are in harmony with my conclusions as to vocabularies. Up to a certain age, about the 5th or 6th year, the girls are decidedly superior to the boys, but after that time the boys are as distinctly superior to the girls. In Dr. Hall's tests, made the first year the children were in

school, the ages of none, perhaps, were less than six years. In Hartmann's tests some were under six, and the girls were ahead; but after six the reverse was true. But a striking fact is that among the Irish children the girls were ahead even after six. This anomaly as to nationality is similar to the peculiarity found as to geographical variation, and both suggest a fruitful field for further inquiry.

It is not unusual that one sex surpasses the other in certain characteristics or attainments at one period of life, while the conditions may be reversed at another stage. In the tests upon the perceptions of children by Monroe, referred to above, there are several illustrations of this. In studying the postage stamp eight points were noted: color, portrait, substance, form, use, perforation, size, and cancellation. Concerning two of these the girls surpassed the boys at all ages, while the boys were superior at all ages as to one point. Concerning five points the girls were superior at an early age but lost to the boys at a later period, but in one of these the boys fell behind the girls again. The ages at which these changes occurred were from 9 to 16, but mostly from 14 to 16. In the one case in which the boys surpassed all the time, there was a sudden increase in gain at 15 years.

General Considerations.

The foregoing statements based upon the investigations made by myself and others require some further discussion and restatement. The statement of a fact should be accompanied by a reason for the fact, or an explanation of the fact, unless the matter be entirely plain to all.

The Influence of Sex.

During the first five or six years of child-life why should girls use more words, or know more words, or have a greater number of concepts than boys? After this period why should the conditions be almost universally reversed? Why should we find an exception to the rule south of the Ohio River? Why should we find another exception in the case of the Irish children, as brought out by Hall? Why, in short, should sex, or climate, or nationality, or geographical distribution, have any bearing upon the superiority or more rapid development of one sex over the other? It is not easy to answer all these questions.

As to sex,—it is generally conceded that the girls develop more rapidly in infancy, as is shown by the preceding tables. Boys talk but little under 24 months. This will account for the superior vocabularies of the girls during the first few years; but as the girls continue to mature more rapidly than the boys, this will not account for the fact that the boys generally sur-

pass them as to extent of vocabulary after they have reached the school age, as shown by my experiments and Dr. Hall's. And what makes the matter still more remarkable is, that in nearly all my investigations, taking pupils, students, or teachers of the same class or grade, the males were younger, sometimes very much younger. This comparative meagerness of the vocabulary of the "gentler sex" seems in direct contrast to the popular opinion that girls, or young women, are better talkers, or have a certain fluency of speech not possessed by the "sterner sex." But this does not imply that woman has a better choice of words. Her proverbial "last word" in the argument may be only a repetition of the first word. The number of words necessary for polite and even animated conversation is very small,—a few thousand at most. A much more extensive vocabulary is required for public address. This is the reason, perhaps, that men are generally better speakers than women; and the reason I may say, in passing, that some men may appear fairly well in conversation, but cannot succeed as public speakers.

Why Man has the Better Vocabulary.

I use the term man somewhat generically, so that it includes the boy. After children have reached the age of four or five years, the boy is out of doors more than the girl. He sees more, hears more, and seems to take more interest in the affairs of the great world in which he lives. He asks thousands of questions, he pries into the secrets of nature. In this way he gets many more ideas than the girl who spends most of her time in playing with her dolls and talking doll-language, which requires only a very meager vocabulary. Thus, the first one or two years spent largely out of doors has brought up the limited vocabulary of the small boy to that of the girl of his age. He continues his method of life, on the street, in the field or shop, still the great irrepressible question-asker. The girl, a little later, may go into "society" more, she may read more books, especially more fairy-tales or light novels; but these do not animate her as do the blood-curdling stories of adventure that the boy delights in. At a little later period he reads the daily or weekly newspaper more than she does, and becomes acquainted with the parlance of politics, commerce, and the affairs of the world generally. This, I think, is sufficient to account for his knowing more words than girls of the same age.

Exceptions to the Rule.

Having arrived at a somewhat satisfactory reason for the two contentions, that during the periods of childhood below the school age the girls know more words than the boys, and

that after that time the reverse is true, how shall we account for the apparent fact that in the South the girls continue to have the better vocabulary during the entire public school course, as shown by most of my experiments; and that the Irish girls know more words than the Irish boys, at least during the first years of school, as shown by the investigations in the Kansas City schools? I should call attention to the fact, perhaps, that the Kansas City test was one of concepts rather than words; but, while one may have concepts which he has not succeeded in naming, I think, in general, there will be found substantial agreement as to the comparative number of words and concepts, as I hope to show later.

Perhaps as to the cause of these two apparent exceptions I should do myself credit by simply saying, I do not know; but I am unwilling to let it go at that.

Having lived and taught many years in the South I have come to the conclusion that the southern boy is more polite, genteel, and docile than the northern boy; but he is less virile, less versatile. I should not say he is more feminine, but less ruggedly masculine. Hence he differs somwhat as to the qualities of his maleness, so to speak. I say this, though mindful of certain characteristics that develop later in life in the southener. The traits of character less dominant in the boy under the sunnier skies are the very ones that have made the boys of the north more bold, aggressive, and interrogatory, and have caused them to pick up more words than their sisters.

On the other hand, the southern girl is more precocious, more daring, more animated than her cousins across the Ohio. She sees more of out-door life, and is freer from the trammels of the nursery. She develops earlier than the boy, and continues to beat him on his own ground, for a number of years. Without detracting from her charms, her femaleness is less feminine in her early years. I believe these characteristics are sufficiently marked to account for the differences I have noted.

Having had the opportunity of observing the Irish a good deal in school work, I have noticed that the Irish boy is slow and plodding. The proverbial Irish wit evidently developed late in the history of the race, and, speaking as a biologist, it is likely to develop late in the life of the individual. The boy in his native isle develops slowly and the mind is sluggish. These characteristics apply to the girl somewhat also; but in common with other girls she develops faster than the boy, and on account of the tardy quickening of his mental powers, he is a longer time in catching up with his sisters than is the American boy. If information were at hand, we would no doubt find that the boy at a little later period gathers himself together, and widens his scope of knowledge, so that he comes to know

more words than girls of the same age. I do not think the characteristics peculiar to the southern boy and girl apply to the Irish children.

How to Secure a Good Vocabulary.

The word good may be used in a broad and comprehensive sense to include not only an extensive vocabulary, but a well-selected vocabulary, just as a good library should contain not only many books, but good and wholesome books.

The vocabulary of the child depends very much upon the home. The child in the home of refinement and culture will certainly gather up more words and get more ideas—and the two are nearly synonymous, as I hope to show later—than in the home lacking in culture and intellectual atmosphere. This is brought out in Miss Dismorr's London experiments.

A constant association with other children of about the same age is an incentive to the little one to talk, and a child so situated will hear more language suited to its capacity than the child brought up in isolation. The character of the vocabulary is often greatly modified by nurses and servants. These in many cases are not only ignorant and unrefined, but often superstitious and sometimes vicious. Southern children, many of them left almost completely in the care of colored nurses, are especially unfortunate in this respect. Corrupted pronunciation, slang, the names of mysterious, fanciful beings which strike terror to the heart, and sometimes profanity, are learned at an early age, and produce a lasting impression upon the child. The man fifty years of age has not entirely rid himself of the pernicious linguistic acquisitions of the nursery. The child's vocabulary may be greatly increased by parental encouragement to ask questions about what it sees and hears. The child is a bundle of interrogation points, and the parents who answer all reasonable questions and encourage the child to ask more, thus increase greatly its stock of ideas and the words which represent these ideas. A well-selected lot of picture-books, playthings, etc., which the child is interested in, undoubtedly adds to the words it may have in store.

At a later period the reading of books and papers has much to do with the number and quality of the storehouse of words at the command of the boys and girls. The number of books is not so important as the quality and the state of mind with which they are read, and the pains taken to learn the meaning of what is read. I have made it a practice to inquire as to the kind and number of books read by those tested, and I am led to believe that the potency of the good book read with a dictionary at one's elbow can scarcely be overestimated. But contact with the world in society, business, and travel must not be neglected.

I have taken some pains to ascertain what text-books and school exercises contribute most to the forming of one's vocabulary. One of these is word-analysis, whether given in connection with English work, or in the spelling-class. The study of roots, stems, primitives, derivatives, prefixes, suffixes, etc., gives the pupil a knowledge of words he can scarcely get in any other way in the grades. An accurate knowledge of a few prefixes and suffixes will put the pupil in possession of hundreds of words of which before he had no definite conception. This is brought out in connection with my tests in the Jackson schools, especially in the sixth grade, white, and sixth and seventh grade, negro schools.

Spelling may be made a most valuable exercise in this respect. It was my custom as a teacher in the public schools to require pupils of all ages to spell, and to know the meaning of the words they spelled. Why should we ever learn to spell a word whose meaning we do not know? We cannot make any use of the word until we grasp its meaning. It is vastly more important to know the meaning than to know the spelling; for we may correctly use a word orally which we cannot spell. In fact most people speak a hundred words to one they write.

I commend the exercise described by Supt. J. M. Greenwood in an article on Spelling (45). He says: "I had bought a second-hand copy of Webster's Academic Dictionary. . . . I took up Webster's Old Blue Book, and I marked down all the words between its two covers of whose meaning I had any doubts. There were sixty-eight of these words, and I hunted up their meanings in this dictionary. I had never looked into a dictionary of any kind a dozen times in my life before, and yet I was 'shaky' on only sixty-eight out of about 10,000 different words in that book." This shows he had a pretty good vocabulary for a young teacher of those days (it was during the first term he taught), and that he had learned how to increase his vocabulary.

The study of English, of course, is one of the most valuable exercises for increasing one's vocabulary. Though nearly two-hundred years have passed, Benjamin Franklin's method has scarcely been improved upon. I quote from President Charles W. Eliot in *Science* for June 1st, 1906. "To improve his vocabulary he turned specimens of prose into verse, and later, when he had forgotten the original, he turned the verse back again into prose. This exercise enlarged his vocabulary and his acquaintance with synonyms and their different shades of meaning, and showed him how he could twist phrases and sentences about." Composition work of every kind is very valuable,

especially if one takes any pains to use just the right word. Much depends upon the teacher in this.

Every school exercise should contribute somewhat to one's stock of words. No word in the reading, history, geography, or other subject, should be passed over until the pupil understands it. If this practice is begun in the lower grades, there will be few words to study in any one lesson.

The study of Latin, and to a less extent, Greek, and other languages, contributes greatly to the growth of the student's vocabulary. Nearly one-third of all the words in the English language are derived from the Latin. A large number, especially scientific terms, come from the Greek. No one who hopes to understand English can afford to neglect Latin. In making the test on Mrs. Crider's vocabulary (see No. 15) I found three different pages of the dictionary on which she did not know a *single word.* These pages were filled with scientific terms derived from the Greek, and she had not studied Greek. She had a fine training in Latin, and this put her to the front of all those tested, yet two or three years in Greek would have added thousands of words to her vocabulary. Even one or two years in Latin or Greek are valuable in this respect. One who has worked out carefully the conjugation of a dozen Latin or Greek verbs has learned new meanings to hundreds or even thousands of English words. Mr. Meserve, who made the best record in the James Millikin University, has had five years of Latin, five of French, two of Greek, two of German, and one of Spanish.

But above all and at all times, make constant reference to the dictionary. The student should never allow the dictionary to get beyond his reach, as he sits at his study table. Have a stand or table especially for it, and always keep it open and in the most accessible position. Form the "*dictionary habit*" early in life; in later life one will have such a storehouse of words one will not need it so much. If a word is mastered when met, then it will reappear hundreds and thousands of times, like the face of an old and long-loved friend.

Vocabulary tests themselves have proved to be one of the most important means of increasing one's vocabulary. After one has tried writing definitions to a few score even of the most familiar words, and found how difficult it is to give a definition that really defines, one begins to make a more careful study of words. In every case where I have given extended written tests the student has shown great improvement in his mastery of words. There should be almost daily tests in classes upon words from spellers, readers, histories, etc., and often upon words that have not been assigned for previous study. Every pupil in school should have a small dictionary of his own,

while an International, the Standard, or the Century is accessible to all when necessary for a fuller study of words.

Importance of a Good Vocabulary.

An old grammar studied in my boyhood days says, "A word is a sign of an idea." One of the best of the modern dictionaries says a word is "used as a symbol to embody and signify an idea or thought, especially a notion or conception." If then a word is a sign of an idea, the more words one knows, the more ideas one has. When, therefore, a man has added a thousand words to his vocabulary, he has put away in the pigeonholes of his brain a thousand thoughts or ideas—ready servants to do his bidding. If a man has a new thought, then, or a new concept, he must at once search about for a word to embody that thought. A word is an incarnate thought. If there is no word in which to house his thought, he must make one, that his ideas may not wander about like disembodied spirits.

This calls up the old discussion as to whether we think in words only. I do not wish to thrash out that subject again, yet it deserves some attention. Fitch in his lectures at Cambridge University (38) says: "Every word which has been invented is the record of some fact or thought, and furnishes the means by which facts or thoughts can be transmitted to others. In a sense, every new word represents a new conquest of civilization, a distinct addition to the intellectual resources of the world."

Laurie in his Lectures on Language (65) says: "For in adding to his [the child's] stock of understood words, we add to his stock of understood things, and, consequently, to his material for thought and to the growth of the fabric of the mind."

Prof. Max Müller, in his Science of Language (75), makes this statement: "No human being utters articulate sounds without an object, a purpose, a meaning. The endless configurations of sound which are collected in our dictionaries would have no existence at all, they would be the mere ghost of a language, unless they stood there as the embodiment of thought, as the realization of ideas." (Vol. 2, p. 51.)

President A. R. Taylor (101), speaking of children's vocabularies, says: "Their knowledge and vocabularies grow at approximately the same rate, and revealing also the function of language in knowledge-getting." The child's words are stepping-stones to knowledge, and represent the ability to get knowledge, whether or not they represent so much knowledge.

Whether we can think without words or not, it is certain that no connected train of thought is carried on independently of the symbols of thought. Therefore, by increasing the num-

ber of words at our command, we increase the number of concepts of the mind.

How a judicious selection of words enhances the interest in a speaker or writer! But he cannot make a judicious selection unless he has an extensive list to choose from. Precision, clearness, and elegance of diction are impossible with a man who has a limited vocabulary. A man who is not able to say directly what he wishes to say, talks in circumlocutions, in his effort to reach a given point. Has any one ever stopped to calculate how many misunderstandings, broken friendships, law-suits, and divorces result from an ignorance of the meaning of words? Lawyers, litigants, judge, and jury, wrestle in a vain attempt to interpret a carelessly worded contract or statute. If men had the power to discriminate in the use of words, and other men had the power to interpret them with nicety, this would be a far happier world.

Correlation Between Grades and Vocabularies.

For a long time I have noticed that the students who rank high in their classes nearly always have good vocabularies; and looking at it from the other point of view, that those who have good vocabularies rank high in their classes. As this correlation between vocabularies and grades had been almost universally true, as far as I was personally acquainted with the work of those tested, I desired to verify the matter more fully in the James Millikin University by consulting teachers as to the standing of pupils, and by carefully comparing my vocabulary tests with my class records and with those records of work kept in the office. I found a marked parallelism between the two sets. It matters little whether we say students do well because they have good vocabularies, or they have good vocabularies because they do well; it matters little which is cause or which effect,—it follows that if you increase a student's vocabulary you increase his standing in his class. The one who has a vague, ill-defined knowledge of words, has vague and ill-defined thoughts, and is incapable of definite, systematic, and logical thinking. If a word is a sign of an idea, bungling, meaningless expressions indicate a clouded, vacant brain.

Two recent articles in the *Popular Science Monthly*, one by Prof. E. A. Kirkpatrick (64a), the other by Prof. E. H. Babbitt (5a), exhibit plans and results very similar to my own, previously recorded in this paper. Professor Kirkpatrick suggests that as the extent of the vocabulary indicates so nearly the mental ability of the student, a vocabulary test might possibly be used as an examination for entrance to college. Professor Babbitt announces that he has successfully used this test with several classes in German instead of an examination for

entrance to second-year work. Those who knew from 2,000 to 5,000 German words were able to carry the work. At the end of the second year they could define from 5,000 to 12,000 German words.

Mere Words.

"Words fitly spoken are like apples of gold in pictures of silver." Words whether audible or representing only the ideas that flit from brain-cell to brain-cell, become photographed upon the memory and mold character. The words we use both indicate and help to fix our characters. There is a reciprocal relation between our words and ourselves. Evil words flow from an evil source, and likewise an evil source begets evil words.

What potency in words! They are sufficient to express the most entrancing poetry, the sublimest oratory, the profoundest philosophy; the most soul-blighting grief, or joy supernal; the most transcendent thoughts of priest or seer or incarnate Divinity. A word may be a message of love which shall make glad the heart, or a messenger of despair which shall blast the life. A word may unlock the gates of the Celestial City, may express the song of the angels and the redeemed around the throne, or may bear through infinite space the thoughts of the Eternal.

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THE CAT: A NEGLECTED FACTOR IN SANITARY SCIENCE.

By Caroline A. Osborne, M. D.

The attention of the writer was drawn to this subject in the fall of 1904. The material for the paper was gathered the following winter. A request for facts bearing on the subject was inserted in the Journal of the American Medical Association early in August, 1905. This request has received so few answers that it seems advisable to gather and correlate the material available with present bacteriological views, and discuss briefly the possibility of the cat being a disseminator of disease. The paper is written solely from the standpoint of medical biology. The problems involved in the prevention of disease are predominantly biological in nature. Many diseases are already known to be due to specific organisms, and their distribution, course, and termination as well as methods of prevention depend fundamentally on biological laws.

Everywhere science demonstrates that all forms of animal life, living with man, may become *infected* with human disease organisms, and may transmit these organisms to each other and to man. In the process they may or may not contract the disease themselves; and may or may not increase or decrease the virulence of the disease organisms in their passage through the animal host. The problem as formulated by Dr. Theobald Smith (20), is thus stated, "How far does nature utilize animals as a workshop for preparing bacteria to act in a pathogenic rôle upon the human race?" He concludes: "There is evidently some physiological relation between man and the rat, as disclosed by the bubonic plague; between man and the horse, as disclosed by the bacillus of glanders. . . .

"Some writers believe in a relationship between man and certain domestic animals, as in case of scarlatina. More general relationships are established between larger groups of animals by anthrax and rabies.

"If we go a step farther into a less cultivated domain, *we can readily think of other possible relationships between human disease and animals in which the causes of human disease may live without producing any recognizable disease. We can neither dispute nor affirm such relationship because we know comparatively little, if anything, of the pathogenic organisms which thrive, say, upon the mucous membranes of horses, cats, dogs, rats, mice, and*

certain birds which enter so largely in the daily life of man both young and old." (The italics are the writer's.)

Cohen's (2) System of Physiological Therapeutics, p. (144), states that—"The domestic animals suffer from a number of diseases transmissible to man, and may also convey pathogenic organisms to man, *without themselves being affected.* This may occur in various ways as follows: 1. *Direct contact.* Most of the human parasitic skin diseases occur in the dog, cat, and horse, and are transmissible to man by contact. 2. *Inoculation.* The most important disease inoculated by the bites of animals is rabies. This occurs most frequently in the dogs but may affect cats, horses, cows, and other domestic as well as wild animals. 3. *Aerial Infection.* 4. *General Contagion.* By various methods, *e. g.*, directly through contact of fondling and play; and *possibly indirectly through the soiling of furniture, carpets,* and *garments,* domestic animals, especially pets, as cats, dogs, rabbits, etc., may convey to human beings the ova of parasites, developed parasites, as the itchmite; or the germs of specific diseases as influenza, diphtheria, and possibly scarlet fever and other epidemic affections. The animal may itself suffer with the disease transmitted, or it may be merely a mechanical conveyor of the germs, or as already set forth—it may convey fleas or insects which may cause the infection in any of the ways discussed." Again, "Domestic animals, especially house pets, are proverbially responsible for many cases of transmission of contagion, as are also the homeless cats and dogs, so common in cities, which *should not be overlooked in local quarantine.* In this connection, Nuttall, at the close of his article, "On the Rôle of Insects in Disease," etc., comments, "it is almost superfluous to add that house dogs should be kept clean."

An editorial in the N. Y. Med. Record for June, 1906, says: "The sanitarian has still more cogent grounds for discouraging the perpetuation of the cat as a household pet, and it would be the part of wisdom for the family practitioner to utter a serious word of warning against the very real possibility of disease transmission through the house cat. The enumeration of scarlet fever, influenza, whooping cough, measles, diphtheria, and ringworm probably does not exhaust the list of diseases whose communication has been, or might have been, ascribed to this intermediary.

"No one who has witnessed the enthusiasm with which children caress their pets, can fail to realize the magnificent opportunity for infection offered in this. The doctor must, in the interest of public health, see to it that no cat is allowed to enter a sick room."

The keynote of our modern hygiene is prevention of disease.

A large proportion of prevalent diseases are transmissible and preventable diseases. The careful isolation of patients ill with these diseases together with attendants, and everything appertaining to the sick room; efficient painstaking disinfection of everything and everybody connected with the care of such diseases, has reached such a perfection of detail, that, apparently, no avenue is left for the further propagation of these diseases. Until recently, the part that domestic animals, particularly pets, may play in such a perfect system of disinfection, has been given very little consideration. A few scattered items are recorded which have attracted only passing interest and little thought. Any consideration of them has been mingled with the suspicion that they are so entirely accidental that it is unnecessary to give them any place in preventive medicine. These facts, however, when considered in their relations to the many elements involved in the propagation of disease become alive with possibilities of continuance if not increasing virulence of fatal transmissible diseases and ought no longer to be neglected.

Of all the household pets the cat is the most widely distributed—it is omnipresent. Few families escape having one time or another, one or more cats as inmates of their family domicile. These cats share the family life of adults as well as children. A well cat receives much care. A sick cat may receive still more in some homes. In others the neglect is all the harder for it, accustomed to luxurious living and away from natural aids to recovery, as the city cat too often is. If any member of the family is sick the cat is too often used as a means of diversion for the invalid, whether adult or child. The cat so exposed going over the house, mingling with the other members of the household and other household pets, and wandering to other homes associating with other household pets, thus spreading the disease organisms wherever she goes, has been little considered but can no longer be neglected.

The facts pointing to the cat as an agent in the propagation of disease are few, comparatively speaking, but their bearing is so important that they can no longer be neglected. Careful scientific investigation is imperative if modern medical science remain true to its duty. The safety of the child demands this. The cat is so close to the centre of many a home that she may literally be her human brother's keeper. A study of the factors in the cat herself which make her an available agent in the transmission of disease is essential, and will aid in getting the proper perspective. In the first place, she multiplies rapidly, and artificial means are not concerted enough to keep her within such bounds that she can be well fed, watched, and controlled. In New York city, in the first nine months of 1905,

the American Society for the Prevention of Cruelty to Animals killed 53,983 cats. The figures for nine years prior to 1903 are 468,065, according to Bird Lore. Other large cities report great numbers killed in the same way. In England, in regard to the formation for the Society for the Protection of Cats, the statement is made—"the society has been recently formed, and it is confidently hoped it will enlist the sympathies of all humane people, whether lovers of cats or not. The innumerable cats that are starving and homeless in London is a disgrace to our community, besides being the means of spreading disease. The carelessness and willful neglect which thus causes our streets and gardens to be thus overrun should be punishable." Boston is a close rival to London—since in 1895, a firm of butchers took subscriptions from citizens to defray the expenses of feeding the cats in the Back Bay during the summer, as there were so many more starving cats there than anywhere else in the city (24). How many other cities duplicate these conditions?

The cat as a warm blooded animal has many structural modifications similar to the human organism. She has adapted herself to her human environment and manner of living since the dawn of history. It is probable she will be in a measure susceptible to the same diseases as the human race *when* she is exposed to such diseases. If the theory of evolution be accepted as it stands to-day—the *present* evolution of life forms must also be accepted. The cat has been exposed to diseases simultaneously with man:—if we can infer that she has, as man has, become immune to certain diseases by the same processes of individual elimination and adaption, we must also infer that to others she may be even more susceptible. The dread inquiry meets us at every turn—"Is she a host through which some of these diseases increase their virulence for mankind?" Pasteur answers this affirmatively in the case of rabies. Osler says, "In order of decreasing severity of hydrophobia come the wolf, cat and dog."

To diseases, changed or changing in character, the cat may be still undergoing a process of slow immunization by individual elimination, similar to man. Bacterial and other disease organisms are slowly evolving changed modes of life to fit changed conditions. Many allied groups of bacteria, pathogenic in nature, cause disease in all the various domestic animals. Some of these organisms are also frequent parasites of normal mucous membranes of healthy domestic animals, including the cat and dog. Certain of these groups are at times the causes of dangerous diseases in cattle, though seemingly having little power to attack man. For the farmer, the question of infection harbored, increased and propagated by the family cat, is

thus of direct economic importance. The cat is known to be subject to pulmonary tuberculosis. Whether this form in the cat is in any way responsible for tuberculosis in the cow on the one side, or connected with human tuberculosis on the other, this is a question involving two fundamental human interests.

The habits of the family cat are well known. Her constitutionals include large areas—even in the city. She is a universal scavenger, bringing as proudly dead and decomposing birds and mice as freshly caught. Commenting on such facts, J. Woodbury Hill says (9), "Many morbid and contagious feline diseases arise from scavenging. Cats left to forage for themselves will pay visits to refuse tubs or other obnoxious receptacles, not only to their own danger *but also that of the human family, numerous instances of which are on record.* She is prone to select rolling places in the dirt and luxuriate in them, perhaps to get rid of the fleas with which she is too often infested. In her careful disposal of excreta, she digs in the ground, getting, of course, dirt into her claws, and her scratch may thus serve as a hypodermic inoculation of various things.

The principles of modern aseptic surgery have demonstrated that the perfect removal of dirt, by scrubbing with hot water and soap, is also as effective in the removal of disease organisms (18). It is also well established that the methods of household laundries, with their boiling, sun drying, and ironing, are such sufficient germicides that these articles, freshly laundered and uncontaminated, can be used for surgical purposes even, if necessary, without further preparation and with perfect safety. But if after all this care, the family cat comes along and takes her nap on them, what is the condition? "Dirt" is practically refuse of various kinds, including excrement. This, dried and pulverized, is blown everywhere by winds and carried mechanically by clothes, feet of animals, etc., into the house at various times. Disease will not follow contact with dirt in itself. *Disease organisms must be present to cause disease.* The question, therefore, is—what organisms, pathogenic in nature, are in dirt, or are likely to be in it, and how long are they likely to maintain vitality and virulence in such dirt (21). Here information is abundant and conclusive to the effect that *all* disease *micro-organisms* have been found in dirt, especially street dirt, and that they are likely to be there. When one runs over a list including those of diphtheria, tuberculosis, pneumonia, typhoid, pyogenic-organisms, influenza, epidemic cerebro-spinal meningitis, ova of various parasitic worms,—it is apparent that such dirt is a thing to be avoided. The bacillus of typhoid is known to exist outside the body "in filthy soil for months, in water, many days, or even months, in ice for months. In milk it multiplies rapidly." Uffelman and

Osler "have recovered it from garden soil, in twenty-one days, from filter soil in eighty-two days, street dirt, thirty days; linen, sixty to seventy days, wood, thirty- two days."

The prevalence of cats in our grocery stores, meat markets, and provision stores, is a feature of the problem to be noted in passing. If one counts up the different stores where cats are, and notices their proximity to food, another link in the chain of health and disease is evident. Food that is to be cooked need not be taken into consideration. Food that is to be eaten raw needs much closer scrutiny—while if the cat takes her nap on the pile of wrapping paper used for wrapping bread, butter, cooked meats, etc., these articles may be the recipients and distributors of whatever she has, and in the case of butter and cheese a good culture medium is offered for the growth of bacteria.

As an article of food for the cat, the rat needs to be considered briefly. The rat is known to be subject to various skin, muscle, and parasitic diseases transmissible to man. (2.) An article in the Medical Record, of Jan. 27, 1906, by Dr. C. E. Palier, on "Mice and Pneumonia," discusses the susceptibility of mice to pneumonia and advances the theory that the prevalence of so much pneumonia in the winter and spring months is due to the pneumonia infected mice taking refuge in the house to avoid the cold. One would be slow to accept such conclusions but the facts are very suggestive and the bearing on the subject is obvious. An editorial in the New York Medical Times, for June, 1906, holds rats responsible for the propagation of hydrophobia, as well as the source of plague, typhoid, typhus, and trichinosis. The rat is known to be universally subject to plague—and the fact that epidemics of plague have been *first* noticed in rats and *afterwards* in man is very suggestive of the fact that the plague organism gains or regains its virulence in the rat, and thus is enabled to attack man.

From one point of view, the menace to health is greater from the rat and mouse than from the cat (13). Rats and mice are known to be subject to tuberculosis, hydrophobia, glanders, anthrax and malignant œdema. In regard to trichina spiralis, the chain of development runs through the pig, to both the rat and mouse, back to the pig.

Two forms of ringworm which affect man, are found in both rat and mouse. Instances are recorded, of the chain through rat and cat to man.

Grout (7) considers tuberculosis in rats and mice one source of infection in dairy milk with this organism. Their small size permits their entrance into places from which the cat is excluded.

Rats and mice ought to be exterminated, but by other means than the house cat living in a home with children. A well fed cat is notoriously a poor mouser. A cat kept on short rations will go to all sorts of places and come in contact with all kinds of infection. Such a cat is, to say the least, a very questionable companion for children.

Historical.

During the middle ages epidemics swept over the entire world (5). These epidemics were often very extensive, the mortality very high, and all kinds of animals were involved, as well as mankind. The connection of the epidemics in animals and man is often noted, sometimes as cause and effect. Occasionally measures were taken to exterminate, or at least, to remove the animals, and thus stop the progress of the epidemics. The cat is mentioned often, as are many other animals.

The nature of these epidemics is often very indefinite. As the diseases raged among animals, they were grouped under the general class name of "*epizootics*," while "pest," "plague," "contagion," "dysentery," are some of the distinct terms used.

Prior to one European epidemic of "pest" in cats, it is noted that smallpox had been raging in many countries among men and sheep. In Constantinople, in 1613, plague raged in man and cats to such an extent that the people carried all the cats away, supposing them to be the cause of the disease.

In 1671-2, an extensive exanthematous epidemic appeared among cats in Westphalia. The mortality was very great and the contagious nature marked. This was considered by some authorities to be *mange*.

In 1713, numerous epidemics appeared among many species of wild animals at the same time an epidemic raged among cats in Hungary. This epidemic was so virulent that many villages were without cats. This was duplicated in 1782-3.

In 1796, an epidemic of a peculiar nature is reported in Holland by the physiologist and naturalist, Prof. Schacht, who described it as having the form of scabies, but he further noted a very offensive acrid discharge from the eyes, resulting in blindness.

In London, in 1797, a pestilence among cats swept them away by hundreds. This epidemic followed an epidemic of "catarrh" among mankind in England, Ireland and America, while in Copenhagen 7,000 cats are said to have died. At this time, pestilence among cats is noted extensively in different parts of Europe. In Vienna, one authority estimated the death of cats to be over 25,000. From Vienna it spread in many directions.

There was a tendency among some observers to associate this pestilence with yellow fever, both on the continent and in England. This epidemic was very persistent on the continent, and numerous careful studies were made of many diseased cats.

In New York city in 1796, and in Philadelphia in 1797, shortly before the appearance of yellow fever among mankind, there was extensive disease among rats and cats, many hundreds of which died. Fleming comments to the effect that this disease has been often observed to precede an outbreak of yellow fever. About this same time this same disease also appeared in London and elsewhere in England. It also raged in New England, and was practically confined to towns. In London within three parishes 5,000 cats are reported to have died. France reported a similar condition, while it was estimated that 9,000 cats perished in New York and Philadelphia.

In 1800, "epidemic malignant" yellow fever raged in America and Spain. In Spain, the domestic animals were involved, dogs more than other animals, and cats next.

As cholera was not introduced into Europe until about 1830, it naturally does not appear until this time among animals. Then all animals both domestic and wild, contracted the disease and died. When the symptoms were observed in domestic animals, they are stated to be more or less like cholera. In Austria, "typhoid dysentery" was prevalent among cattle in some places, and cats, dogs, pigs, goats, and even frogs died in unusual numbers. The number of cats dying was said to be remarkable. (Fleming's Animal Plagues.) The Lancet (3), reports an epidemic among cats at Delhi—resembling cholera, as follows: "From May to November, 1875, cholera raged in Delhi, in all about 500 cats died with it. It was confined, as regards cats, to the city, 20 to 30 often being brought in dead on successive mornings. The experiments conveying cholera from man to the cat were successful. The Sanitary Commissioner of India thought the disease due to worms and not to cholera. The author and several of his colleagues thought it cholera.

The association of hydrophobia and the cat is important—especially in view of the repeated cases reported at the present time.

Historically (5), it is noted since 1809, in Germany among domestic animals and as acquired from foxes. In 1815, a case is reported in which a cat had an encounter with a fox attacking the poultry. About three weeks later the cat bit a servant girl. The cat was killed the next morning. The servant girl developed hydrophobia in a few months after and died. In the epidemic at this time, wild as well as tame cats were subjects of rabies, and the evidence was strong that the disease was

communicated to them by foxes. The epidemic of 1815 spread widely, raging more or less, until 1827. Everywhere the association of foxes and cats was noted. The Black Forest was the especial centre of this epidemic, but it was also noted in Norway, Denmark, and England and elsewhere as frequent among dogs and cats and wolves in the first three countries. The contagion was most frequently communicated to cats.

Occasional cases of hydrophobia among cats are noted at the present day and as stated before—it increases its virulence in the cat. Bites of cats suffering with it are productive of a more malignant type of rabies in both animal and human victims.

Mumps is a minor disease and hardly to be connected with animals at first thought. Dr. Erasmus Darwin, however, in his Zoonomia, Vol. 3, p. 369, reports in 1796 an epidemic of mumps among cats as follows: "In the village of Haywood, in Staffordshire, I remember a whole breed of Persian cats, with long white hair, was destroyed by this malady along with almost all the common cats of the neighborhood, and as mumps had not long before prevailed among human beings in that part of the country, I recollect being inclined to believe that the cats received the infection from human beings."

Dr. Theodate Smith, of Clark University, observed a similar epidemic among the cats of Maine, and also in Washington, D. C., about ten years ago.

Studying in detail the relation of the cat to disease, it is natural, perhaps, to start with diphtheria.

Diphtheria is one of our most common, well-known, and most dreaded diseases, even though we have anti-toxin to aid in its treatment. Here, the part that animals play in its dissemination is better known—for we have a specific organism—easily identified, as its cause. Opinion is divided as to whether similar diseases in animals are identical or not. Osler (16) states: "Cats, calves and fowls are subject to contagious membraneous diseases, which are, however, not identical with diphtheria in man and not communicable to him." Cohen's Physiological Therapeutics (2) states: "The lower animals, as cats, dogs, horses, cattle, and chickens, occasionally suffer from a pseudo-membraneous affection of the upper respiratory passages simulating diphtheria, and from this infection has been claimed. It is rare, however, that true diphtheria bacilli are found in these animals, although they have been found to be susceptible to the disease experimentally induced."

Abbott (1) reports experiments upon kittens in which inoculations resulted in the production of a pseudo membrane on the trachea at the point of inoculation. The membrane resembled that in man and diphtheria bacilli were recovered

from it, and the fluid in the tissues around it. Rotch, in his Pædiatrics, states that cows, cats, dogs, and pigeons may have diphtheria and be a source of infection to those brought into constant contact with them.

Parke's (17) Hygiene states that an affection of the throat, similar to diphtheria may be found in cats, pigeons, fowls, etc., during epidemics of diphtheria. Klein believes diphtheria to be a natural disease of the cat, and has also shown that cows, and calves inoculated with cultures of diphtheria bacilli develop a disease similar to diphtheria in cats, and which is usually fatal in two or three weeks. In the cow, the bacillus was recovered from the milk as well. In this connection it may be noted that an observer found virulent diphtheria bacilli in the urine five hours after the inoculation of an animal. The contrary fact has been stated in connection with human infection. Roux and Yersin produced wasting paralysis and ultimately death in animals by the inoculation of the urine from virulent cases of diphtheria.

Cases illustrating the agency of the cat are as follows:

Dr. H. B. Schofield, Parkston, So. Dakota, reports: "Oct. 17, 1897, I was called to see a sick child, who, I found, had diphtheria, and who finally recovered. A younger child was treated with serum on the second day and recovered. One, the eldest, had died before I saw the family. History—Children had a pet cat which was taken sick and died a few days previous to their illness. They held a funeral and buried it. Only a few days elapsed before the eldest was taken sick and died of diphtheria. The next younger and lastly the youngest were taken sick as stated above."

Dr. J. R. Ryan, of Philadelphia, Sept., 22, 1905, says: "In the matter of cats as a source of disease, while I never had a positive case of cats as a cause, I had two cases, one of mumps and one of diphtheria, where cats were associated and showed post-mortem lesions and germs, supposedly causative of the disease. The diphtheria case consisted of four children, who had the disease. They all recovered, but bacteriological tests of throat showed positive, time after time, for several weeks. It was then noticed that several cats in the house were sick; two had died—apparently choking. A bacteriological examination of the throat of one of them, showed positive diphtheria bacilli. At the request of the board of health of this city I took the cat to them. Post-mortem revealed membrane in throat and trachea. The other cats were immediately destroyed and in two or three days cultures from the children's throats were all negative. In this case the children were quarantined while cats were free to roam."

Dr. Jewett relates the following case in the Medical Record.

"A farmer's two children, suffering from diphtheria, had a pet cat which was with them much of the time for the first week of their illness. On the fifth or sixth day of the disease I was asked to see the little six-year-old daughter of their next neighbor, who lived about one-fourth mile from them. I found her with a well marked case of diphtheria. They stated positively that there had been no communication between the two houses. The little girl had had an attack of diphtheria when she was about two years old, and, as she was an only child, they had avoided every case of sore throat since. On my next visit I found the girl fondling the boy's cat, and learned that when well the children were constant playmates, and that the cat was as much at home in the one house as in the other. The next day the cat seemed sick and died that same night. I made a post-mortem examination, and judging from the condition of the mouth and throat (which were lined with false membranes), decided the cat died of diphtheria and had been the means of spreading the disease from the boys to the girls. Three other cats on the farm died, all with same throat symptoms of diphtheria. One of the boys died, the other recovered as did also the girl."

The following is reported by J. M. Randall, M. D., of Graceville, Minn.: "During the years 1897-1898, diphtheria occurred abundantly if not epidemically, in a German community occupying two adjoining towns in Traverse Co., Minn. Periods of quiescence of a few weeks would be followed by a fresh outbreak, frequently in families apparently secure from the infection. These people had for the most part large families, and my attention was attracted to the fact that the first child to be taken sick was almost invariably the next to the youngest, the two-year-old, the least apt to meet with diseased persons. Even during the school quarantine measures were fairly effective for the pupils, but failed to protect the infants at home. It is a matter of common observation that cats in the country visit each other at distances of a mile or more and this, in connection with the habits of the animal to put its nose into everything on the floor and then to rub it into the child's face, led to a simple conclusion. A crusade was started on cats in that region, three-fourths of them were killed and the rest rigidly excluded from the house, whereupon the disease promptly subsided, and I think it has hardly been found in that neighborhood since. Having practiced in this community from the time of its early settlement, I have met many sporadic cases of clinically typical diphtheria where the possibility of direct infection for several weeks previous could be ruled out absolutely, but never, as far as I can recall, except where the disease had previously existed in the neighborhood and cats were permitted

in the house. It should be mentioned that during the Traverse Co. epidemic a number of cats sickened, and some died with characteristic symptoms."

Dr. Law sends the following: "I may add a case that came under my notice in Ithaca of a kitten which died of a malignant sore throat, and which was followed promptly by a fatal (diphtheria?) in the owner, a young girl that had taken care of the kitten up to its death. In neither human nor feline victim was the true nature of the disease demonstrated by bacteriological investigation."

Scarlet Fever. Scarlet fever is as much dreaded, if not more, than diphtheria. Its specific organism is still unknown and hence the difficuly of tracing infection by animals. None of the infectious diseases are more tenacious or virulent than scarlet fever. Numerous instances illustrate its terrible virulence after months or years, when contact between infected material and a susceptible individual takes place.

Gibson (8) states that scarlet fever is carried by means of domestic animals—such as dogs or cats. Evidence points to the cat only as a mechanical agent here, just as anything else coming in contact with the infected material can mechanically convey infection. In this connection, a case of infection by means of a rabbit is noted in this city. The rabbit was owned by a child who had an attack of scarlet fever. One day the rabbit escaped into a neighboring yard, and another child played with him. In a short time the second child came down with scarlet fever, and this was the only source which could be found of infection for the second child.

The following case reported in the Lancet for July 28, 1906, illustrates the point. The case occurred in a family in which all hygienic precautions were duly observed. The family returned to town from the country seat because scarlet fever had broken out in the neighborhood. Some days later one of the daughters, sixteen years old, came down with the disease and was duly isolated while the disease ran its course. On the twentieth day of the illness a younger sister returned home and though kept from her sister, after twelve days came down with the same disease. The infection in the second case was traced to a cat in contact with both patients.

Tuberculosis. Tuberculosis in its various forms is not only one of the widest diffused of human diseases but is also found in practically all the warm-blooded animals, and occasionally in the cold-blooded ones. Among domestic animals—cows are more affected—it is rare in sheep, but frequent in pigs Osler states that dogs and cats are not prone to it but that cases are on record in which pet animals have become infected from their tubercular owners. Gibson states tuberculosis to exist

to a wide extent among domestic animals and often proves as fatal as in man. Inhalation of dried tubercular sputum is followed by infection in the most refractory animals. Animals fed on tubercular matter nearly always become infected. The cat is more frequently affected with spontaneous tuberculosis than is the dog and is more readily rendered tubercular experimentally. Kittens are specially susceptible as are the young of all species including man. Law's Veterinary Medicine (13) comments to the effect that dogs and cats rarely show the disease in their natural condition but contract it readily in inoculation. In both animals the history usually shows the connection of house life and the habit of eating after tubercular people.

The public is alive to the fact that pulmonary tuberculosis is a preventable disease and also one which from its extent it is most desirable to check. Every source of infection is watched as closely by the laity as by the physician, and the disinfection of the sputa containing the organism is faithfully done in an efficient manner. The recognition of the fact that the cat may be as susceptible to infection of pulmonary tuberculosis as man himself ought to be sufficient to keep the cat away from sources of infection and away from children and susceptible adults if the cat develop a persistent cough. In the latter case the cat ought to be restrained from spreading disease through the community. Grout has called attention, also, to the danger of such cats, living on farms, infecting milk in the dairy as they help themselves from the milk containers. The alarming mortality in infancy everywhere demands the exclusion of all possible sources of infection of milk supply.

Smallpox (13). As every one knows, smallpox has a most characteristic eruption, which passes through successive stages. Not only man, but the greater part of the lower animals are subject to it, even insects being said to be susceptible. An instance in which the cat is the mechanical agent in its transmission is as follows: "A case of smallpox developed in a family and it was absolutely certain that there had been no exposure or contact with the outside world, and the contagion was traced to a pet cat. Not a member of the family had been away from home or the farm, and no one had called, white or colored, for two or three weeks, due to the fact that smallpox was in the neighborhood and the family were alarmed, and kept aloof from the outside world holding no communication with it whatsoever. They had a pet cat, which was known to visit a neighbor frequently several miles away, where there was a case of smallpox. This cat was a great pet of the little girl of the family, and the only one who really handled or fondled the animal. In two weeks after the visit of the cat to

the infected district the little girl had developed smallpox (21).

A case of *Whooping Cough* in a cat is reported by Dr. Ryan, of Philadelphia. The cat developed a cough with vomiting. After the cat was killed an examination showed characteristic features of the disease.

Glanders is an infectious disease mainly confined to the horse, but infectious to man. Its mortality is very high. Huidekoper (10) states that it is usually found in cats around knacker's yards, in zoölogical gardens, and veterinary dissecting rooms. While cats are always susceptibe to it, it is contracted by other domestic animals as well. Huidekoper cites a case which came under his observation. After finishing an autopsy on a horse which had glanders, he noticed a cat and kittens eating some of the organs placed one side for demonstration. He ordered the cats all quarantined and in four days all developed glanders and had to be killed.

Anthrax (13) is one of the most fatal and widely spread of diseases with which cattle are affected. When man is infected it is always through infected animals, either directly or indirectly. Osler states that anthrax, both geographically and zoölogically, is the widest spread of all infections.

Billing's "Public Health," states the cat to be more susceptible to anthrax than the dog. Law observed in Genossee a cat licking a stone boat in which anthrax hides had been carried. The cat died afterward of anthrax. Anthrax forms spores, and this fact, with the fact that it clings tenaciously to hair, makes it a more dangerous infection.

Malignant Edema (13) is a much rarer infection, perhaps owing to the fact that exposure to air inhibits its growth. It may attack both man and the lower animals, including the cat. Many cases are fatal within twenty-four to forty-eight hours.

A disease of cattle and other domestic animals is due to the fungus growth *actinomyces*, or "*ray fungus*," and should be noted in passing, as cats in common with other animals, have been experimentally inoculated with it. Its common name, "lumpy jaw," refers both to its common seat and clinical appearance. It is variously known as "cancer of the tongue," "osteosarcoma," etc. It occasionally affects man, causing serious and even fatal lesions of the lung and the brain. It may also affect the skin (13).

Parasitic skin diseases are very prevalent among all lower animals. The cat, rat, and mouse seem general hosts, and the dog is often infected by them (6), (13).

Many of the specific organisms of these diseases are well known, and comparatively easy to identify. The agency of the cat, therefore, in their propagation, is easily established.

Numerous cases are on record in which the infected cat has infected man, and some of these instances will be noted in the following review:

Various forms of *Tinea*, a fungoid growth, are known under the general name of "ringworm." These forms attack the scalp, beard, and sometimes any part of the body.

The most common, perhaps, is that attacking the hair, and in adults, the beard. Its common name is "barber's itch." This form is very prevalent among school children, (3% in common city school, Law) (13), and in asylums. It is easily transferred from person to person by clothing, towels, brushes, etc. It is found commonly, also, on young domestic animals. Auvergne recognized its transmissibility from animal to man in 1835. Fenger identified it in the cat in 1865.

A closely allied form causes the common forms of ringworm seen on the face, hands, and other parts of the body. Leidy, Fenger, Borch, and others have noted contagion from the cat to man. "It is interesting to note that in this case the chain usually extends from affected rats and mice to the paws and face of the cat, and thence to the children who played with it" (Law).

In the British Medical Journal, Vol. 1, 1901, p. 324, an instance is given in which a patch of ringworm on the left cheek of an infant of four weeks, was traced to a similar patch of long standing, on the neck of a cat in the house. Dr. Leslie Roberts has noted the following in the British Medical Journal, Vol. 1, 1903, p. 424. "The cat in question was infected in Egypt. She was brought to England, and twenty days after she was taken to a house in Cheshire where there was a large family of children. A few days later ringworm was noted on the neck of the oldest daughter. Within a month fourteen individuals had been infected, and also a skye terrier and a kitten. Later the infection was conveyed to a school."

A slightly different form, the honeycomb ringworm, produces circular cup-shaped crusts on the affected parts. Children readily acquire it from the infected face and paws of the cat.

Another variety of ringworm produces lesions clinically identical with that of the common form. Dr. A. D. Mewborn reports two cases in children aged ten and sixteen, respectively, contracted from a cat, and concludes, "In view of the long tedious treatment of ringworm of the scalp, as well as the enforced absence from school, the danger of contracting these diseases should be called to the attention of parents."

All varieties of ringworm are very resistant to treatment. Experiments have shown that dry spores infect buildings for two years, and resist exposure to light for months. The con-

tact of any hairy or abraided surface of the human skin with these spores is sufficient to inoculate the person with them.

External Animal Parasites (13). The flea of the dog is also that most common to the cat. It may live on man. The human flea can be conveyed to both cat and dog.

While these insects are to be avoided in themselves, they are still more to be avoided as hosts of bacterial diseases fatal to man. The flea on the plague infected rat has been shown conclusively the host of the plague organism, and by means of the cat, to have infected man (11).

The sand flea, a tropical insect, though living in plants and sand, yet may attack man, as well as cats, dogs and all other domestic animals.

The fecundated female penetrates the skin and lays her eggs, often one hundred or more, under it. This results in inflammation, ulceration, and even death of the parts. It may involve the deeper tissues, and sometimes causes loss of toes in man, and even feet and limbs in animals.

Scabies (6) in one form causes *mange* in the cat if left to shift for herself. This is contracted by all the domestic animals, and man is not exempt.

The disease is seen oftenest in the fall, when people returning home after vacation, find that their cats—which had been left to shift for themselves through the summer—have become infected with this loathsome parasite. Cats are very susceptible to it, and it spreads often in an epidemic form, if active measures of prevention are not taken. It was first described by Wedelius in 1672. At this time it raged epidemically in Westphalia and elsewhere, and nearly all cats were killed by it. The parasite was first seen by Gohier in 1813, and Hering described it in 1838. The effects on the cat are usually very severe, and while it may last three to six months, it often kills a young cat in a few weeks unless active treatment is given. It is usually limited to the head and neck and often involves the eyes, ears, nose and mouth. Any cat, unless closely guarded, is sure to be exposed to the disease and all cats may easily acquire it.

Internal Animal Parasites (2). The Amœba Coli may be an inhabitant of the large intestines of man and many of the lower animals. Some varieties are harmless. Others are found present in certain forms of dysentery and in many cases of hepatic abscess.

One variety, Amœba Coli felis, is pathogenic to cats, and this form is identical with the tropical form. Quïnke and Roos found that only encysted amœbæ could survive the passage through stomach and duodenum, at least in cats, and it is thought they are acquired through cats.

Of the ciliated forms, the *Lamblia intestinealis*, found in the

cat as a harmless form, Osler (16) notes as found in the intestine of man. He also further notes that flagellates have been found in cases of pleurisy and gangrene of the lung in man. Other allied forms of which little is known, are found in the cat, and occasionally similar forms are thought to have caused serious intestinal and hepatic disease in man.

Trematodes are soft-bodied leaf-like worms. They are widely distributed, and many forms are known to be causes of disease. Some of these are as follows:

Distoma Hepaticum (13) is the common "Liver Fluke" of the sheep. It, as well as *Distoma lanceolatum*, is widely distributed among all the domestic animals, and may occasionally cause serious and even fatal disease in man.

Distoma sinense (13), found in Japan, in its mature form, infects the gall bladder of man and the cat, one cat furnishing six hundred specimens. Some provinces of Japan have severe epidemics due to this parasite.

Distoma felineum (16), found by West in cats in Nebraska, is a common human parasite in Siberia.

Distoma Westermanni (13), is a variety which has long been recognized in Japan for its ravages in the lungs of man. Sometimes whole villages are infected to such an extent that they have been quarantined by other villages; even physicians fearing to go to them lest they be infected.

These epidemics are characterized by cough and hemorrhage from the lungs. Many cases at first have been ascribed to tuberculosis. Similar epidemics have occurred in China and other countries, often fifteen to twenty per cent. of the people being infected.

Ward, in 1894, found the organism in the lungs of a domestic cat in Ann Arbor, Mich. Cats are known to suffer with it in Japan. Law observes that it is sure to be brought here by the Chinese and Japanese as well as our own Philippine soldiers. He emphasizes the need of efficient measures of restriction and extermination from the small areas in this country wherever found, since its spread can only be a public calamity. Law further observes, "all cats or dogs having a rusty or bloody sputum should have that examined for the eggs of this parasite, and if found the host and all animals of the same species living near it, together with all susceptible animals in the same place or in the water shed from it, should be secluded and destroyed at public expense and the bodies properly disposed of." (Law, Vol. V, p. 372.)

Of the *Cestodes* (tape worm), the *Bothriocephalis Latus* has been found by several observers in the cat. This tape worm is not often found in this country but is quite common in some parts of Europe where its larval form inhabits certain fish.

One other form, *Taenia Cucumerina*, is common to dogs and cats, and cases of infection of children by it are reported.

Nematodes (round worms). *Uncinaria duodenalis* is an organism which affects the upper part of the small intestine of laborers whose work brings them into contact with the soil, as brickmakers, miners, etc. The parasite causes a great loss of blood and severe ænemia follows. Infection with this parasite is increasing in this country, probably through diffusion by Italian laborers and domestic animals.

Stiles has shown the disease prevails widely through southern states and is chiefly responsible for the ænemia and poor physical condition of the people in many localities. (See Osler's Practice, p. 359.) Both dogs and cats are known to be subject to infection with a similar worm, living in the *duodenum*, and if present in large numbers, a fatal ænemia may follow.

Trichina Spiralis is a worm common to man, the dog, and the cat and most of the domestic animals, as well as many wild species. It has been found in every country where it has been sought. The chain through the pig and rat, back to the pig has been noted. In man if the worms have been ingested in sufficient numbers, severe and even fatal illness follows.

Cats in common with other animals have many other parasites, some of which are pathogenic to them, and some of which are also pathogenic to other animals though not to man. Much research is needed here. These scattered facts throw many flash lights on wide fields of biology and pathology inviting study at every turn.

Summary and Conclusions.

The preceding paper has endeavored to show, as concisely as is consistent with facts, the rôle the cat plays in the transmission of disease. Present studies in disease reveal everywhere the wide distribution of both vegetable and animal parasites in all species of animals. The cat is peculiarly adapted for the distribution of the specific organisms of disease from animal to animal, as she goes in and out freely among all, and from animal to man, and man to man, in her life in the home.

The diseases reviewed, show her to be susceptible to all species of disease organisms, bacterial, those due to fungi, and to animal parasites, both external and internal, thus covering the range of disease organisms of the human family.

In the past she has suffered in common with other species, the ravages of the various epidemics sweeping over large areas of both Europe and America. In some instances (5), she has been held responsible for such epidemics, and active measures taken to remove her from the community.

The cat's habit of scavenging, in connection with the freedom of the house, give her unlimited opportunity for acquiring and spreading infection mechanically from person to person. Bacteriological studies of the human mouth have shown over one hundred species of bacteria, some of them pathogenic in nature, which may thrive under certain conditions (22). As careful if not a more careful study of the cat's mouth ought to be made to show what organisms are normally in it, since the cat spreads her protégés all over herself in her ablutions. Modern medicine emphasizes the importance of protecting the young child from the common transmissible diseases until it has reached an age of comparative immunity. Modern caretakers and parents throw such a barrier of protection around the child that it is, or is likely to be, in the same relation to infection from lack of exposure that the islanders of the Southern Pacific were, when a stray case of measles resulted in an epidemic which threatened to depopulate the islands. A similar instance occurred in our own country when the Indians were exposed to smallpox for the first time by the Spaniards and died by thousands. A protected child never coming in contact with diseases of contagious nature is ordinarily more susceptible to these contagions than if not so closely secluded and cared for. Such a child often has less resistance to even the so-called mild infections and is quickly overcome by the more severe ones. The same is true of delicate, susceptible adults. These facts lead to the following conclusions:

1. The cat should be kept away from all sources of infection, and from all people ill with transmissible diseases.

2. If a cat becomes infected, or is suspected of being infected with any transmissible disease, such measures of restriction should be taken that it will be impossible for her to spread disease.

3. All stray cats ought to be watched and cared for, with the thought clearly in mind, that they may have acquired all kinds of infections in their wanderings. They should be kept from children, until it is certain the children will not be infected by them. There should be no source of infection open to cats, and all cats in contact with children ought to be as closely watched and guarded as are the children themselves.

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MENTAL DEPRESSION IN YOUNG WOMEN AND CHILDREN.

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Large numbers of young women enter our normal school each year just after they have graduated from the high school and remain from one to two years. Many of these are away from home for the first time. Homesickness, worry, "lonesomes" and "blues" are among the problems of instructor and class officer during the early weeks of each year. It was probably the memory of those weeks as well as some interest aroused in the psychology classes in the subject of insanity that raised such questions as, What are the blues? Why do we have them? How can we prevent them? How can we overcome them?

A slight investigation showed that the available literature in regard to the problem was unsatisfactory and meagre. The students promptly decided to assist the instructor in an investigation of the subject. Papers were written by 225 young women, 8 young men, and by 60 children in sixth, seventh and eighth grades. The papers written by the young men do not materially differ from those written by the young women, but they are so few in number that they are not considered in this study. A large percentage of the students are of foreign parentage, but only two or three show any accent. All are from the smaller high schools of the state, all of which are under state supervision. All of the students reporting seem to have been under very similar influences.

Fractions in percentages are omitted in this report. Seventy per cent. of the students report their first attack of mental depression to have been between the ages of twelve and sixteen;—"about fourteen," is the common reply. Forty of them remember attacks scattered along during the preceding years. Down[1] has already called attention to the not infrequent occurrence of melancholia among young children.[2] Twelve out of thirty-five girls in the grades, and six out of twenty-five boys mention the same years as periods when they first began to suffer most from the blues. Eleven of the girls and four of the boys claim never to have had the blues, nor to have

[1] Down: Mental affections in childhood and youth. Ch. III.
[2] Colvin denies this. See *Ped. Sem.*, XIII, 91.

had any other of the forms of depression mentioned. Perhaps a dozen of the young women, according to their accounts, have yet to suffer in any such way.

The question, "Has there been any one year of your life when you suffered from them most frequently?" yielded very similar results. There was, however, an interesting exception. Twenty commented on the first year away from home at the normal school as the year in which they suffered most. Asked to explain frankly why, the replies indicated that for the first time the young women had found themselves forced to make decisions for themselves, and to carry considerable responsibility. Heretofore their thinking had all been done for them, and now, with anxiety they naturally awaited the outcome of their first independent efforts. One young woman speaks of her whole girlhood as a happy dream up to the time that she had left home, with no care whatever. It is, perhaps, fair to ask if it is a kindness to a daughter to rear her thus?

The cause of the frequency of depression during any one year was reported as "poor health," "nervousness," or "a disagreeable study in the high school,"—generally mathematics. Home troubles were mentioned in a few cases. Fifteen per cent. were away from home when these attacks first came on. There was the presence of a strain or stress of some kind in nearly every case. To many it seems to have been the realization of rapidly approaching womanhood with its greater responsibilities as well as the realization that a care-free childhood was rapidly receding. One student writes, "I was about twelve when I was seized with the fear that I was not good enough and I inflicted many disagreeable tasks upon myself." Many others write in the same vein, several mentioning the fact that "that year was the turning point of my life."

To the question "Have these attacks grown in frequency, or do you have them more rarely?" Forty per cent. say less frequently; twenty-seven per cent. say more frequently; thirty-six per cent. claim to suffer only at rare intervals now. A few have a hand-to-hand fight to keep them off. One girl writes, "I must have been born with them." No one of the children seems to have any habit of having them at all.

Forty per cent. of the students note alternate periods of depression and elation, the pendulum swinging too far in one direction rebounds to an extreme in the other. The following are typical statements from as many different girls:

(a) "Sometimes after great joy and good feeling there comes a like period of depression and worry."

(b) "Yes, I notice that when I am unusually happy something happens, or from some unknown cause my happiness disappears and I become as depressed as I was happy before."

(c) "If I have been out the evening before having a splendid time I sometimes feel blue and despondent the next morning."

(d) "Some days it seems as though I could not be happier. My feelings are keyed to the highest pitch, but on the following day I experience a feeling of despising myself and everything that I have tried to accomplish."

(e) "This feeling of elation seems to be caused by the great effort that I have to make to throw off the blues."

(f) "I know a girl who has nothing much to do and who is either always having the blues or a good time."

Fifty-two per cent. note the depressing effect upon themselves of cloudy, rainy, or stormy weather. Twenty-eight per cent. are most likely to become blue in the late afternoon or evening, often "just at dusk." Only six of the students report depression in the early morning. While the children are very susceptible to the weather, they claim it is because their activities are limited. "You can't do anything them times," says one boy. Sixteen per cent. of the students find Monday a day they dread. Sunday is a close second with ten per cent., and is a day especially disliked by the boys. Other days receive occasional mention.

In regard to the seasons twelve per cent. complain of the fall, ten per cent. of the winter, six per cent. of the spring, while only six of the students complain of the summer. The following are typical:

(a) "Rainy weather always makes me feel blue."

(b) "I am more susceptible to the blues in the latter part of the day."

(c) "I have noticed that a cloudy, disagreeable day was apt to give me a severe attack of the blues; then, cold weather too."

(d) "It seems to me one is most likely to have the blues in the evening. Monday is the most dismal day in the week to me, because we are not thoroughly started in our work. I think, too, the spring is the season when we are liable to have mental depression because it is the closing of our year's work and we are tired out."

Nothing different appears in the papers by the children concerning seasons and times when one suffers most.

The question, "Do you know of anything likely to make you blue, such as illness, loss of sleep, etc.?" aroused much interest. Forty-two per cent. report blues associated with some physical ailment; twenty per cent. with over-fatigue, twenty per cent. with loss of sleep, eighteen per cent. with discouragement due to failure to reach ideals or to succeed as well as they desired in their work. There is mention of being over-

sensitive, of the effect of uninteresting studies, of the "hard problems of life," of the associates one has or has had, of having too little to do on some days and of worry.

One student writes, "I think the blues in my case were almost always caused by some disturbance of mind, as when I was thinking of my school work and wondering if I was going to pass. If I began to fear that I was going to fail it would almost always give me an attack of the blues, especially if I was tired and discouraged."

Yet another says, "After a night of worry, when I could not sleep, but tossed about with that same old question always appearing before me, in the morning I usually have an attack of blues. A bad headache is also apt to give me an attack of the blues."

Twelve of the girls in the grades confess that they are subject to depression when thinking of the outcome of their lessons. Among other causes mentioned by them are, having to do unpleasant tasks, being alone, things going wrong, lack of work, having no fun, quarrels, etc. The boys do not differ in their returns excepting that all of their statements are more brief.

The length of time that an attack of mental depression of any kind lasts is reported in the cases of thirty-four per cent. of the students to vary from a half-hour to a half-day. Fifteen per cent. suffer about a day, while thirty-three per cent. report yet longer and varying periods. With the children attacks sometimes last till the bad weather is over, but generally till something distracts their attention.

Efforts to ward off approaching blues felt to be coming, meet with varying success. The desire in all cases is to get one's attention away from himself and troubles. The favorite methods of forty-five per cent. of the students are "taking a walk," "visiting a cheerful friend," "working harder," and "doing something new and interesting." More or less will exertion seems to be necessary in the cases of the majority. Among the miscellaneous methods are "a good cry," "a nap," "mother and my religion," "playing on the piano," and "interesting myself in helping others."

Strange to say, and yet perhaps not either, three of the students say, "sometimes I don't feel inclined to ward them off. I don't know why it is, but I seem to enjoy them."

Recovery is reported to be accomplished by practically the same methods. Thirty-one per cent. report their troubled state of mind as "going suddenly," while with twenty-six per cent. "the blues go gradually."

The effect of depression upon sleep, appetite, dreams, work and exercise is marked. It was apparently difficult to de-

scribe fully one's feelings when suffering from depression. The following is, perhaps, characteristic of cases of blues. "Everything seems to go wrong. One wants to be alone till it is over. One's friends don't seem to care for him any more. I feel my own shortcomings so. My troubles seem so great. I feel discouraged, lonely, depressed, abused often, or perhaps am irritable. Life does not seem worth living. Half of the time I don't know what I do want, my mind seems in such a turmoil." Mental pictures are generally represented as being blurred and indefinite when the blues are present.

Distinctions have not been clearly drawn between blues, worrying, homesickness and loneliness. They seem to shade into each other. The following are typical of replies by the students: (a) "The world seems wholly bad when I am blue. I feel as though I wanted to give up everything and do what I have to do for my own benefit. I seem to be an utter failure with everything against me."

(b) "When I have the blues I feel depressed and there does n't seem to be any particular reason for it. I don't care to have any one speak to me, and if they do they don't always get a pleasant answer, for I just feel mean. I can keep up for a time this way feeling mean and angry with myself. After a time I feel weak, and then if some one says just the right thing I give up and cry and it is soon over. This may be my freak disposition rather than the blues, but at any rate they do not occur very often, only a few times in a whole year. I imagine, too, trouble that never comes, and often have a feeling, too, that something awful is going to happen."

(c) "When I am blue I think every one hates me and that I am the most abused person alive. Everything goes wrong and any little thing will make me feel very badly. I cannot see the bright side of anything. I usually get cross and want to be left alone. I feel like lying around and thinking of my troubles. I don't care to go any place. My imagination is at its best when I am blue. I get to thinking about some little thing and it soon appears like a mountain when really it ought not to bother me in the least."

The following are typical of the children's reports:

(A girl of fourteen.) "When you feel as though all the good had gone out of the world, that you could never be happy again, or else you do not feel extra fine and no one cares, you have a very bad case of the blues. To be lonesome is just as bad, I think, if not worse. I remember when I was away from home of crying every night until I cried myself to sleep from fatigue. I used to worry over tests until I brought myself up to such a pitch that I failed. This gave me the blues and for a week I would feel very unhappy. Then I would pick up again and

go to work to make up for the failure. I always take a dose of hard work when blue, or a quick walk, or ride in the fresh air. If I keep busy or do something I never feel blue, lonesome or worried.

"In the dreary winter time when you can hardly see because of sleet or snow I am most likely to get the blues because I cannot go out of doors. I was about ten years old when I was first troubled."

(A boy of twelve.) "To be blue is to be cross at everything, to be lonesome and when everything seems to go against you. Lonesome, makes me blue the most. I get over it in two or three hours. I try to keep my mind off of it. I have them mostly in the summer on cloudy, rainy days when there isn't anything to do. I have them off and on."

Nothing beyond what has been already reported in the papers of the students appears from the study of the children's papers.

Seventeen per cent. of the students speak of one thing as persisting, of the mind moving in one little circle, out of which it seems impossible to escape, and of the mental images growing ever clearer. These are probably well defined cases of worry. In these, association processes seemed to be blocked. A given situation or very frequently a possible situation only is before the mind and there is a fear more or less great that the outcome will be unfavorable. Fatigue and depression are very likely to follow or actually develop along with worry.

Nearly sixty per cent. when blue borrow much needless trouble.

Not much that is worth while seems to appear in regard to loneliness. It is recognized as a type of depression which like homesickness is largely due to the absence of favorite friends or relatives, or of absence from one's accustomed environment. It is most likely to be felt in the evening or on Saturdays and Sundays.

It is interesting to compare the conditions reported in this study with those of insanity. In general we have the peculiarities of insanity all present at various times in miniature. The sane person overcomes his troubles of a mental nature. The insane requires a very much longer time and suffers very much more and often does not recover at all. "In melancholia," according to Mercier,[1] "the weight of the defect lies with especial severity upon the visceral nervous system and affects, secondarily, and with less urgency that moiety of the system which operates the adjustment of the self to surroundings." There are always present in melancholia intense de-

[1] Sanity and Insanity, p. 336.

pression of spirits, and undue lack of bodily activity together with an aversion to activity, indifferent appetite, insomnia, loss or weight, torpor of conduct and bodily processes. The sufferer feels at his worst in the morning. "As a rule the defect in the bodily activity corresponds pretty nearly with the depth of the melancholia." Insanity is the result of a stress of some kind. (Titchener.)[1]

Similarly the blues are largely associated with some light stress. There seems to be some exception worth noting here, however, since fifteen per cent. of the young women *say* that they sometimes have blues when *they* know of no reason whatever. Generally[2] there is present either fatigue or some physical disorder, and again the strain may be mental consisting of failure, bad news, etc. Rarely do the blues trouble one of mornings unless over-fatigue is present. Otherwise they come at the end of the day, or the end of the week, or of some period which may have grown out of one's life conditions thus far.

The young women as well as the children have recognized the importance of a change of environment, of activity and of an exertion of will power to both ward off and to overcome depression. In a few cases there seems to be established regular periods for an attack of the blues. This seems to be the result of manner of life, or perhaps of a failure of all effort to overcome them. It is worth while, too, to note the establishment in some cases of periods of alternate depression and elation.

There are at hand a few data gathered at first hand during the past six years of children subject to fits of rage. In all of these cases the frequency of the attacks has grown much less. In one case the attacks lasted from one to three hours and then were followed by long periods of weakness physically. These are suggestive, too, of the attacks of mania. Perhaps it may be possible to sustain the theory that children in their growth and development show many symptoms of mental disease and disorder.

The period during which depression is most prevalent covers that of the girl's most rapid growth and development. It seems to be a period of great physical and emotional instability during which the danger is great from overstrain. We know that development may easily be warped at this time. It, too, is a time when life seems to open widely and to present within a brief time manifold possibilities to the girl. Some instinct leads her to omnivorous reading during this period as the

[1] Primer of Psychology, p. 280.
[2] See Abrams: The Blues. Ch. III.

written accounts of reading these students have done show.[1] It is a time, too, when her ideals for life are largely determined, when the school and society are both making demands of no slight nature upon her; and when her health for life is being largely determined.

"An alumna," writing in the Popular Science Monthly, for May, 1904, says in regard to this period, "If her brain claims her whole vitality, how can there be any proper development. Just as very young children should give all their strength for some years solely to physical growth before the brain is allowed to make any considerable demands, so at this critical period in the life of a woman nothing should obstruct the right of way (of physical development). A year, at least, should be made especially easy for her, with neither mental nor nervous strain."[2]

The remarkably small number of well women and the prevalence of disorders of nerve and stomach among them should add emphasis to the necessity of a greater, more intelligent, and more sympathetic care of girls during the years mentioned,—12 to 16. The decrease in frequency of blues after this period represents something of the growth in adjustment to maturer womanhood, of the better understanding of life's problems, and of better self-control.

In the case of those whose periods of suffering from blues have increased in number and frequency there is probably present some defect in health. There may also be the necessity of better self-control and of a better outlook on life.

The effects of season and weather have been fully discussed by Dexter.[3] "There are many persons who are simply victims of the weather. Atmospheric changes play upon them as upon the Æolian harp. A leaden sky weighs upon them with a crushing weight and suggests all manner of unpleasant anticipations."

President Hall's criticism that the American girl eats anything she happens to want, at any time and to any amount, and is often encouraged to do so, is worthy of consideration. Certainly having the more complex physical system it is more

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[1] This is illustrated by one of the students as follows: "I used to think that I did n't have as much fun as other girls and used to feel blue about that. What had been fun or good times no longer pleased me, and I felt sort of lost and out of place with the world in general. I think this was due to the fact that I read every minute of the time I could get away from other work." See also Bullock in Rep. Proc. N. E. A., 1897, p. 1015.

[2] See also, Whitaker: The Health of American Girls. Pop. Sci. Mo., Sept., 1907, p. 241.

[3] Weather Influences, p. 40.

likely to be thrown into disorder than a man's and such habits are therefore ruinous to her, both mentally and physically.

For the teacher ambitious to succeed there is the suggestion that "forewarned is forearmed." It is possible to fight off the influences of undesirable weather changes, and to develop greater self-control. One can so study the problems of point of view, health, sleep, diet, recreation, and associations as to bring himself to the highest degree of efficiency in his life's work with a minimum of mental depression.

EDUCATIONAL ASPECTS OF LANCASHIRE AND YORKSHIRE.

By G. R. F. Prowse.

Statisticians, I believe, estimate how many Americans cross the Atlantic, and calculate how many million dollars they "leave" in the Old World each year. Some of these travellers are of an enquiring turn of mind and go abroad with the definite idea of enlarging their knowledge of men and acquiring new ideas. Very few, however, of these explorers, as far as I can judge, except the business man whose thought rarely strays beyond the tariff, of set purpose, ever study the great industrial community north of the Trent. They would doubtless reply, if closely questioned, that their interest was in London, the historic centres and that fascinating semi-feudal country—rural England. Industrialism they can study well enough at home in Pittsburg, Lowell or Philadelphia.

They may go a step further and plead the example of Franklin, Irving and Howells. It certainly is a curious fact that, while the counties of the Red and White Roses are quite as characteristic as London, the Trossachs or Warwickshire, few if any foreigners have ever studied them philosophically, as every year, the scenery and life of the former are weighed and found wanting, or otherwise, by distinguished Frenchmen, Germans and Americans. As far as I know no Britisher has ever attempted such an estimation. Perhaps it is an impossible task. We have novels with local color, from Shirley onward, in abundance; careful ethnological studies; and, since the Chamberlain 'gospel' was proclaimed, a formidable array of economic argument; but no calm detached valuation of the heart of industrial England, such as its importance warrants.

Every aspect of life in this northern community deserves attention by students of comparative sociology, paidology, etc. Many of the most important problems which are pressing for solution here are being worked out there in an intense form which admits of the elimination of irrelevant factors more readily than in the New World. The political importance of this district may be gauged by the common saying, What Lancashire thinks to-day, England thinks to-morrow. Its economic status is high. An American has recently stated: "Manchester is in my estimation the most remunerative centre in

Europe for investment of American enterprise." Industrial Lancashire and Yorkshire, for its size, is the most densely populated area in the world. From a mere commercial point of view it is interesting.

Although, of course, the people of the County Palatine and the County of Broad Acres, are children-in-arms industrially compared with such Continental centres as Aachen, yet they have had by far the longest experience of modern power-machinery, and offer an interesting field by means of experimental psychology for the study of certain hereditary attainments. They have also had the fullest opportuity to adjust themselves to the labor revolution caused by the inventions of the XIX Century.

Socially Lancashire and Yorkshire are interesting. The population is derived from at least as many different parent stocks as any old world progressive community. To-day, however, it is one of the most homogenous industrial centres in the world. Population and commerce have kept such equal pace that there is little emigration or immigration. In a town of ten thousand inhabitants, a few years ago, I could almost have counted the "foreigners" on my fingers.

If I ventured to assert that this great district was not markedly intellectual I should no doubt be confronted with statistics from the Dictionary of National Biography. Nevertheless, I think Lancashire and Yorkshire well exemplify the modern theory that a highly objective democratic community is more apt to produce a fairly uniform type of medium ability than a few towering geniuses. If Charlotte Bronte had filled in her outlined character, Joe Scott in Shirley, as she well knew how to do, we should have had a true Tyke. It is perfect as far as it goes, better than the Yorkes and William Farren, who is a little overlaid with sentiment, though thoroughly characteristic to those who know how to read between the lines. I have known and highly esteemed many Scotts and Farrens.

This brings me to the esthetic character of Northern England. It is a sealed book to the outsider, whether he be a Cockney curate or an observant foreigner. Few would imagine that behind that Doric roughness which repels so many, that Jack-is-as good-as-his-master manner, lies hidden a depth of sentiment, of esthetic appreciation, of love of nature truly remarkable in such an objective practical people. There are more Farrens than even local pride gives itself the credit of. Having gone in and out among all classes there for forty years it is only when I have viewed this esthetic quality from a distance, and comparatively that I have realized its full extent.

Before many years are over the United States will be filled up and its industrial population become more stationary and

homogeneous. A study of countries where such conditions already exist must be of considerable advantage to American educationists. In my opinion Lancashire and Yorkshire afford the best field for such a study.

Personally I am inclined to widen the outlook very considerably. I believe we are entering upon an era of crystallization in the civilized world, a consolidation of the vast mental outlook opened up by science, an age of "suspended judgments." No sane man would limit or attempt to anticipate particular discoveries, but it seems to me that the very discussion of such subjects as aerial navigation and the synthetic production of albumenoids shows a certain discounting of their effects and that the world at large will accept and use such discoveries as stolidly as they do to-day artificial perfumes or the telephone; they are trifles which will be swallowed up in the vast apperceptive mass of our race. Further, a much larger proportion of the important mechanical and chemical appliances and processes are, I fancy, nearer a static condition than most people imagine. Invention is concerned with details. I view the resultant of these gradually decelerating inventive forces and consolidating labor conditions as the ultimate underlying causes of the trust movement. Machine production in many industries is becoming stereotyped and is approaching a condition similar to that occupied by the handicrafts for ages in the past. After all the great problem is the adjustment of labor to modern conditions, and this absolutely conditions all educational work. This problem can be studied to great advantage in Northern England.

It is mortifying to an Englishman to read the History of Education and discover how little comparatively his native land has contributed to the advancement of theory and practice. To-day, in England, educational problems are so beclouded by sectarian bitterness and tradition that many Englishmen and most outsiders fail to realize the full significance of the acts of 1902 and 1903. Thanks, mainly, to Sir John Gorst, they started an educational movement compared with which, from a pedagogic point of view, all this wrangling about non-provided schools is a mere detail. England, among the great nations, has probably the best balanced educational system to-day. Each city and county is free to develop its school policy, subject only to a general direction from Whitehall.

In no part of England will more advantage be taken, and in fact is more advantage being taken, of this liberty than in Lancashire and Yorkshire. Primary, secondary, technical and higher education are being correlated and closely articulated. A representative of the Massachusetts State Y. M. C. A., told me recently that he found in relation to their evening schools

more instructive examples of continuation schools in Yorkshire than on the continent of Europe. I confidently predict that in a few years pedagogues and paidologists will find subject for close study in the educational practice of Lancashire and Yorkshire, as typical of what can be done in an homogeneous highly evolved and specialized democratic industrial community.

Exception has been taken to the abolition of the School Board, by the acts of 1902 and 1903. I think, however, all thoughtful students of pedagogy in its widest connotation will eventually endorse this step. If education is to be shaped for the whole life of the community, or *rather to shape it,* it would have been an incalculable blunder to have two co-ordinate rate-collecting and administrating authorities in each city and county—one dealing with the mere mechanism of education and the other overlooking the hygiene and other vital interests of the people.

In conclusion I wish to place my subject on a practical basis and make a suggestion. I should not advise any student to rush off with hot foot to study conditions in Lancashire and Yorkshire without previous preparation. The subject is too large and complicated, and ten to one he would fall in with some particular clique, get in a groove and be lost philosophically. I should certainly not recommend any one to wade through Blue Books or government reports either from London or Washington.

Question the whole community! Study their daily life in their press; for if the newspapers of a community are a fairly accurate indication of its attitude towards life, they should be rich in suggestion to an impartial mind. With the political, educational and other aspects of Lancashire and Yorkshire roughly mapped out in a thesis, a study on the spot would be proportionate, even if some ideas formed from the news columns had to be discarded. I make this suggestion deliberately because Lancashire and Yorkshire have a very remarkable self-revealing press. Omitting Liverpool as too cosmopolitan to be of much use for pedagogic purposes, there are five representative papers:

(1) *Manchester Guardian*, Manchester. Liberal, Free Trade, "Pro Boer," Non-conformist.

(2) *Manchester Courier*, Manchester. Conservative, Protectionist, Imperialist, Church.

(3) *Leeds Mercury*, Leeds. Liberal, Free Trade, Imperialist, Non-Conformist.

(4) *Yorkshire Post*, Leeds. Conservative, Protectionist, Imperialist, Church.

(5) *Yorkshire Observer*, Bradford. Liberal, Free Trade, 'Pro Boer,' Non-Conformist.

On account of their heavy advertising columns all these papers are read by many who do not agree with their views politically or ecclesiastically, and they of course supply news on all subjects affecting the district. I had occasion a couple of years ago to examine very minutely the contents of one of these papers for a few months and was simply amazed at the various subjects dealt with day by day. There were literary and esthetic articles which seemed almost out of place near staid discussions on the price of cotton and the future of South Africa.

If I may venture to particularize I should recommend subscription for the *Manchester Guardian* and the *Yorkshire Post* for three or four months. They are both well edited papers and are sanely wide apart in politics and in their general character, so that they cover, perhaps, a wider field for study than any other pair would do.

This appreciation of Lancashire and Yorkshire is confessedly optimistic—a background for pedagogic work. Every statement can be challenged. Every one must take his own "trade discount" off them. And still relatively speaking my account is, I believe, broadly correct. It would be easy to paint Lancashire and Yorkshire in lurid colors, to expose the conditions of infancy, of physical and moral degeneracy, of drink, of excessive love of sport, of the break-up of home life, of the economic waste which still allows so many children, leaving the primary schools, to engage in labor which has no value as training for mature life. I can only ask: Are such conditions, so far as they exist, peculiar to Lancashire and Yorkshire? and here I must leave the matter.

EDUCATION IN INTERESTS.

A Study in Experimental Pedagogy.

By Cephas Guillet.

The teacher of English Composition has possibly a better opportunity than any other, both to become acquainted with the real life, the true mind and heart of his pupils, and to make his subject the means to them of culture as broad and deep as their natures. To develop the gift of linguistic expression, by which the noblest men of all ages have influenced humanity so powerfully, is his splendid function. But along with the development of this gift, indeed as an essential part of such development, must go a deepening of interest, a widening of knowledge, an enlargement of the apperceptive grasp of the pupil.

With a view to coming into closer contact with my pupils, I made out a list of subjects for composition, appealing to a wide range of interests, and submitted it to the whole school (the Toronto Technical High School), requesting that each pupil should rearrange the list in the order of his preference. From these data I found for each class the degree of interest already taken in the various subjects and followed this order in treating them. The list of subjects is as follows, with the initials that represent them in the chart referred to later:

Plants and Animals (P A).
Earthquakes and Volcanoes (E V).
Some Myth or Legend of Ancient Times (M L).
Some Novel or Story of Modern Life (N S).
Life of some Great Man (G M).
Some Bible Character (B C).
Some Great Event in History (G E).
Some Voyage of Discovery or Exploration (V D).
Customs of some Foreign People (F C).
Some Industry or Invention (I I).
Sports and Outings (S O).
History of some Science (H S).

Each subject was first discussed in class and sources of information suggested; then it was assigned for composition. The pupils were allowed to prepare either a speech or an essay (or both) on every subject, to be spoken or read in every instance before the class. A theme that lent itself well to gen-

eral debate was debated, the class resolving themselves according to choice into an affirmative and a negative side. This was done with the subject "Life of some Great Man," by changing it into "Resolved, that warriors have done more good to the world than statesmen." In a second year class of boys the majority chose the side of the warriors, but the weight of argument was on the other side. In another class, instead of a speech or essay on Foreign Customs being required, the class debated the subject: Resolved, that contact with the European races has done more harm than good to the other races of the world. It is an ominous fact that the affirmative can win such a debate easily.

The second year science boys, whose ages average sixteen, resolved themselves into a society during the last term, electing a chairman, secretary and critic, who held office two weeks and were then followed by a new set of officers. The main business of the meetings was either the discussion of some subject agreed upon by vote at the previous session, or impromptu speeches upon subjects drawn by each speaker by lot from a number suggested by the pupils and supplemented by the teacher. The order of speaking was also decided by lot and the time limited to a certain number of minutes upon motion to that effect. The election of the first set of officers did not show very good judgment. A careless writer was chosen for secretary, a slovenly speaker for critic, and a rather weak chairman was elected. Whether this was due to inexperience or to the absence at first of a disposition to take the matter seriously, I do not know. But thereafter the officers were selected with good judgment. The succeeding secretaries did their work neatly and well, the chairmen conducted the meetings with dignity and despatch, and the critics took their work seriously and displayed judgment and tact in their remarks. The second critic was thought so good that some were for re-electing him; but that did not meet with general favor, as it was felt that the office ought to be passed around so that as many as possible might gain the valued experience.

Reviewing the whole work of the year, I am satisfied that the plan pursued of combining oral with written work, choosing broad subjects, providing a pabulum of rich suggestiveness, and leaving the rest to the initiation of the pupil, has been successful. The unity and purpose evident in the scheme called forth the confidence of the pupils, and the wide latitude allowed in choice of topics stimulated their energy, emulation and self-activity. The pupils have shown a constantly increasing interest as well as capacity. I have found that some pupils who write poorly speak well, and *vice versa;* but that the oral work has an excellent effect upon the written, giving

increased facility, freedom and naturalness of expression. As in learning to draw, so in learning to speak, one should aim at facility first and accuracy second. Again, an artist who has had experience in clay modeling will almost unconsciously model his figures in his drawings, so that they stand out with naturalness. Similarly a speaker who gains ease in oral speech will learn to write with a grace and naturalness that can hardly be obtained by the practice of written work alone. I imagine that our great writers were also great conversationists and had a favorable environment in youth to form their speech. The plan generally followed, at least in some parts of the country, of demanding written compositions only, to the entire neglect of oral speech, is one-sided and defective, not only from the point of view of individual development, but also from the sociological point of view. In a democracy, that man can hardly be called educated who is unable to express his ideas effectively in public. He has not been trained for citizenship. In every pedagogical faculty there should be a specialist in oral speech, who should train the teachers how to develop this highly useful and beautiful faculty in their pupils. Teachers so trained also might do a very much needed work by addressing the public frequently upon educational and sociological questions. The teachers as a body are entirely out of touch with the people; whereas our position in the state gives us the right, if only we had the zeal and the ability, to lead.

Near the close of the school year, the pupils were asked to write an account of the work in composition done during the year. It was gratifying to find that, without an exception, the pupils expressed themselves regarding the plan pursued and the benefit accruing with hearty appreciation. Some typical utterances from their point of view may not be uninteresting as showing that pupils do not fail to meet half way the teacher who makes an honest effort to understand and interest them.

"Composition has been to me one of the most interesting and pleasant subjects of the year. I, for one, most thoroughly enjoyed the preparation almost as much as the final speech or essay, and we are all grateful to our teacher who made so many hours pass with interesting talk on Foreign People, Books, Discoveries, Great Men and the beautiful characters of the Bible" (girl of 15).

"The work gone over in the past year in Composition has been altogether a success, and every one appreciated it as being interesting, informing and in cases amusing. It helped us understand past events better, and to be able to get up and speak if called upon to do so" (boy of 15).

"During the past year the work in composition has been

very enjoyable, interesting and also profitable. It seems to me Composition has been a regular bugbear to students in both Public and High schools. But for a great many of us that is all over like a bad dream. Thanks to the kind advice of a very patient teacher, we at last are feeling more and more confident in our reading and speaking in public" (girl of 16).

"We have learned many interesting facts, have acquired the art of speaking, and have enjoyed ourselves instead of feeling it a burden" (boy of 14).

"These subjects were followed by a talk on the way each had prepared and delivered his speech, which did so much good that some boys, who would not move from their seats, tried the oral. Those who gave oral compositions from the first showed great improvement" (boy of 17).

"In composition I have learnt something that I think will be of use to me for the rest of my life, and that is the power to get up before an audience and speak upon some subject. The first time I lacked grit to get up. The second time I was nervous and felt warm. Since then I have been more and more at my ease" (boy of 17).

"In time we could get up without the class seeming to grow suddenly large, and thus we were able to throw more vim into our subject. We are all glad that this method of teaching composition has been adopted, as we now realize that it is bound to be of help to us in the future" (girl of 14).

"It is very helpful, when one goes out to enjoy an evening, to get up on your feet, if asked to give a little speech praising those who take part, etc. I know that one time, before we started to make speeches, I would not go out to a party, even with girls and boys of my own age, for fear I should be asked to make a speech. But it doesn't bother me in the least now" (boy of 16).

"It has taught me not to be afraid of my own voice; and I find that when out in company I can talk with a great deal more ease" (boy of 16).

"All hope that the master will continue in this same way next year, allowing those who wish to write, and the others to speak" (boy of 13).

"Unusual interest was manifested in the debate" (boy of 16).

"This year's work in composition has been a complete success. We started at the very beginning of the year with a change from the regular routine of just writing out a composition and handing it in to be marked. . . . By this time we had ceased to be afraid to speak, so our teacher proposed the forming of a class club" (boy of 14).

"The Science II Society was carried on very successfully for

six weeks, and gave the pupils an excellent training in conducting public meetings and in public speaking. All the students entered into it with a will, and very few failed to speak at any of the meetings" (boy of 14).

Such expressions of opinion could easily be multiplied, as there was complete unanimity. There is considerable evidence here of that "dumb-bound feeling" of the adolescent of which Miss Williams speaks, as well as of the "rise of interest in words as instruments of thought" which characterizes this period of rapid psychical development.

The pupil's evident preference for oral speech over written, once his shyness has worn off, is probably due to his feeling that oral speech is a completer expression of his personality. In writing he is merely copying down his thoughts silently and painfully for some one else to read. In reading his essay to the class, and particularly in delivering it orally without manuscript, he is more truly, more actively, more directly expressing himself; he is using his vocal muscles, his facial muscles, indeed, his whole body in the expression, and has a sense of power that mere writing cannot give.

As for the "kindness" and "patience" of the teacher, to which reference was sometimes made, that was, of course, a mere matter of professional duty, of ordinary pedagogical tact. In criticising the pupils' efforts I made it a rule to comment first on the good points of the speech or essay, and only then, and often not at all, to mention ways in which I thought it might be improved. By my praise I warmed their hearts, gained their confidence and aroused a feeling of comradeship. I thus stimulated their self-respect and self-activity, relaxed their muscles tense with worry rather than attention, and opened their minds to receive with calm intelligence any suggestions I might make for their improvement. I do not doubt that the praise and encouragement were more helpful to them than the suggestions. The longer I teach the more I believe in the power of love and faith. We can make a child or a youth a thief by believing him a thief, we can make him hateful by hating him; and we can also develop his infinite intellectual and spiritual capacities by believing in their existence and by showing him that we do honestly believe him capable of great things. When one considers the immense number of cells that lie fallow throughout life in every human brain, one has a physical basis for this faith, as well as a hint of the exceeding but little recognized importance of the teacher's calling.

During the last month of the school year I asked the pupils of my classes to list our twelve subjects in the order in which they were now interested in them. In this way I thought to obtain an idea of the effect the work of the year had had upon

their interest in the various subjects taken up. All the subjects except Plants and Animals were dealt with in the classes of second year science boys (24). All were taken up in the larger of the two first year commercial classes (23 boys, 9 girls), except three, Plants and Animals, Industry and Invention, and History of some Science. The other first year commercial class (17 girls, 5 boys) I taught but about two-thirds of the year. The subjects discussed with them were seven: Foreign Customs, Sports and Outings, Novel and Story, Great Men, Voyage of Discovery, Bible Characters, and Myth and Legend. The numbers of the pupils given are of those only who were present at the beginning and end of the work and handed in both lists. The fifty-two boys, as well as the twenty-six girls, averaged fifteen years of age, the science boys sixteen, and the commercial boys fourteen and a half years, at the close of the school year. The charts given herewith show the rank of interest of the various subjects in the estimation of the pupils of the various classes and ages in September, 1906, and June, 1907, respectively.

It is evident at a glance that the interests of boys and girls differ very greatly. The subjects in which the greatest sexual difference in interest appears are Novel and Story, Bible Characters, Foreign Customs, and Plants and Animals, in which the girls are predominantly interested; and on the other hand, Great Events, Industry and Invention, History of Science, Earthquakes and Volcanoes, and Voyages of Discovery, in which the boys are most interested. The sexual difference in interest becomes less pronounced during the year on the whole in younger boys and girls, and more pronounced in the older; the sum of the differences in the twelve subjects being 24.4 and 19.4 for September and June of pupils of 12 to 14 years, and 18 and 24.8 for pupils of 15 to 18 years. Nearly half the boys in question—and these in general the older boys, being in their second high school year—were in classes in which were no girls. Possibly this fact accounts in part for the more pronounced sexual differences of the older pupils.

The second year boys differ from the first year boys in their course of instruction; as the former take practical science subjects and the latter commercial. This fact appears in the prominence of Industry and Invention and the History of Science in the list of the practical science boys. I took up both subjects with these boys, talking to them about the progress of invention, and giving a summary history of the sciences of chemistry and electricity. As a result, their interest in these subjects was still further stimulated. In the commercial forms I did not reach these subjects; consequently the commercial boys' interest in them scarcely changed. As for the

TABLE I.

Relative Interest in Subjects for Composition at beginning and end of School Year 1906–7.

Rank	All 26 Girls Av. age in June, 15. Sept.	June.	All 52 Boys Av. age in June, 15. Sept.	June.	The Second Year Science Boys (24). Av. age in June, 16 Sept.	June.	The First Year Commercial Boys (28). Av. age in June, 14½. Sept.	June.
3								
.4								
.5								
.6								
.7							VD 3.75	
.8								
.9		BC 3.96					GE	
4			VD					
.1		NS 4.04	4.04			II		GE
.2								
.3								
.4	NS & BC		GE		VD			
.5						II		VD
.6								
.7	SO							
.8				VD				
.9	FC				GE			
5		FC		GE				
.1								ML
.2						HS	VD	GM
.3	GM			II			5.25	SO
.4			II			SO		
.5		ML						GM
.6		VD						
.7			GM		ML			
.8		SO	5.67	GM 5.75				FC
.9				ML 5.8	GM			
6						FC	GE	
.1		GM	FC					FC & II EV & BC
.2	VD	ML		SO				
.3	6.15	6.2	ML	BC 6.34				II
.4				FC 6.44		GM		
.5			EV	SO 6.46	EV			NS
.6						BC		EV
.7				EV	HS			
.8							ML 6.75	ML
.9								
7								
.1		GE	NS					SO 7.18
.2	GE				SO	FC		NS 7.21
.3		PA						
.4						EV		
.5								
.6								
.7					NS			
.8		EV		NS				
.9	II							
8				HS 8.06				
.1			BC					BC
.2			8.15		BC			
.3						PA		
.4	EV							
.5								
.6		II			PA	NS		
.7								
.8	PA							
.9			PA					
9			HS					
.1				PA				
.2								
.3							PA	
.4								
.5								
.6								
.7								
.8								PA
.9								
10								
	HS 10.5	HS 11					HS 10.9	HS 10.5

TABLE II.

Relative Interest in Subjects for Composition in September, 1906, and June, 1907.

Rank	Girls of 12 to 14. Sept. (19 girls).	Girls of 12 to 14. June. (9 girls).	Boys of 12 to 14. Sept. (29)	Boys of 12 to 14. June. (19)	Girls of 15 to 18. Sept. (7)	Girls of 15 to 18. June. (17)	Boys of 15 to 18. Sept. (23)	Boys of 15 to 18. June. (33)
3								
·4								
·5						BC		
·6								
·7					NS			
·8		ML						
·9							VD	
4		NS						
·1					SO	NS		
·2			VD & GE					
·3	BC							
·4								
·5								
·6								
·7	NS & FC			VD			GE	
·8						FC		II
·9		BC		ML	BC			VD & GE
5	GM				VD		II	
·1								
·2								
·3				GE				
·4	SO	VD						
·5	ML		GM			SO		
·6		FC		GM				
·7			II	BC	FC			
·8								
·9				FC				
6							GM	
·1			SO		GE		FC 6.04	GM
·2			FC			VD	SO & ML	
·3		GM & PA			GM			SO
·4			EV	SO & II				ML
·5								
·6	VD	GE	ML 6.55					EV 6.67
·7					II	GM		BC 6.7
·8				EV		ML		FC 6.73
·9		SO						
7							EV & NS	
·1		EV	NS					
·2								
·3								
·4								HS
·5	GE							
·6								
·7						GE		
·8								NS
·9						PA		
8			BC	NS				
·1					ML			
·2								
·3	EV							
·4	PA & II						HS	
·5						EV		
·6						II		
·7					EV		BC 8.65	
·8								
·9			PA	PA	HS			
9		II						
·1								
·2			HS					
·3								PA
·4				HS				
·5							PA	
·6								
·7								
·8								
·9					PA			
10								
	HS 11.1	HS 12				HS 10.5		

girls, who were all in the commercial classes, these two subjects fell considerably in their already low estimation.

Bible Characters and Novel and Story began and remained the two subjects most favored by the girls, Voyage of Discovery and Great Events the two most liked by the boys. But the girls' interest in their favorite subjects increased, while that of the boys diminished relatively to other subjects during the year. In the case of the science boys this decrease was very marked, the subjects Industry and Invention, and History of Science being both placed above them. The girls' interest in the boys' favorite subjects increased, in Great Events slightly, in Voyages of Discovery rather more. This increase was due to the younger girls, who approach the boys in both these boyish interests. On the other hand, the boys' interest in the favorite subjects of the girls increased markedly in one case, Bible Characters, and decreased as markedly in the other, Novel and Story; and this is true equally of the science and the commercial boys. I was much gratified by this result, as I had aimed at it very definitely, by making my talks about the Bible as interesting as I could to the various classes of pupils. The Bible talks consisted of a rapid survey of the whole political and religious history of the Hebrew people, and also the reading of the book of Jonah, with such comment as was necessary to reveal the sublime beauty of the story and of the truth which it embodies.

There were no other changes so marked in the boys' lists. Their interest in Foreign Customs fell off a little, while that in Myth and Legend advanced somewhat more. The same is true of the girls. In dealing with the first question, I read and talked about the Japanese, the Chinese, the negro children of South Africa (after Kidd), and the French Canadians. They were particularly interested in the Japanese, doubtless partly owing to my own interest, and partly owing to recent events. Of myths I read many Greek (of Atalanta, Halcyone, Echo, Hercules, etc.) and several Norse and Indian. In one of the commercial classes I read Bulfinch's account of the siege and capture of Troy and the wanderings and glad homecoming of Ulysses. The increase of interest in myth and legend is shared alike by the younger and older girls; while in the case of the boys it is only the younger that evince this increased interest. Here the younger boys incline to resemble the girls, just as in the case of Voyages of Discovery and Great Events it was the younger girls whose interests most resembled the boys'. This is further evidence that the interests of the younger boys and girls are more alike than those of the older boys and girls. The sexual difference in interest shows itself very plainly after puberty, and with increasing

clearness as the interests are developed. This marked difference in interest is almost entirely ignored by our educational systems and methods.

It is interesting to compare the older boys' decreased historical, biographical and literary interests (in Great Events, Great Men, Myth and Legend, and Modern Fiction) with the notable increase in their interest in Bible Characters. The same is true of the older girls, except that the interest in Myth and Legend increases, though it remains far behind the interest in the Bible, which, indeed, becomes the dominant interest in the older girls, surpassing even the interest in modern fiction. The reading of romances, as one might expect, is evidently one of the strongest interests of adolescence, especially in the case of girls. It, therefore, requires no stimulus, but only direction towards the best of the host of novel-writers that storm the young mind.

Speaking of fiction, it is interesting to note how clearly the essential vulgarity of a story, its lack of fidelity to nature or taste, hidden though it be by the art of the writer, is sometimes brought out by the direct and artless touch of the youthful paraphraser or summarizer. The facts in "A Humble Romance," for example, were stated by a girl of fifteen in so bald a style as to be almost unreadable before a class. Henty's impossible feats of boy heroes were unmasked in like manner. Even Tennyson did not escape. The vulgarity of the costly funeral with which the otherwise refined, if not ideal, Philip Ray seeks to honor the noble old sailor, Enoch Arden, was laid bare by the unskillful hand of the young writer. The pupil of refined sensibilities leaves the incident out altogether.

Another subject which, like modern fiction, suffered, and deservedly suffered, during the year is Sports and Outings. If it had not been understood that the subject included trips taken by the pupils themselves, it would have been placed still lower in June. Only among the boys of Science II did this interest grow; and this was, I think, largely due to the growth of class feeling, which found its chief expression in sport and which was stronger in this form than in any other. Young people are, as a rule, quite sufficiently interested in sport and need no added stimulus from the schools. As for prizes, whether for physical or intellectual endeavor, they are sheer confessions of failure. Scholarships for needy students of all ages are, of course, a very different thing and are bound to play a far larger rôle in popular education. There is no doubt that a reasonable amount of sport stores up energy and gives a unique occasion for the development of many admirable traits of character; but the over-indulgence which is so common is wasteful. If the energy thus wasted were employed in the

arts and crafts, it would result in a development of brain and brawn of far greater survival value for both the individual and the race than the big calves and biceps and the cunning tricks and knacks of the foot-baller and the gymnast. With all our athletics there is not in the government schools of Ontario any true physical education in the sense of the scientific application of gymnastic, calisthenic and athletic exercise to correct individual defects and induce a healthful development of the body.

In dealing with Earthquakes and Volcanoes I read them, from Shaler's Aspects of the Earth, the letters to the historian Tacitus, written by the nephew of the naturalist Pliny, describing the celebrated eruption of Vesuvius, in which Pliny lost his life. Then I described to them some of the most famous volcanic eruptions and earthquakes. We noted the situation of these disturbed regions in or near the sea-floor and in lines of primordial weakness in the earth's crust. From these considerations we were led to an examination of the causes of these disturbances. The subject, however, is to the young pupil a comparatively narrow one and offers little range for his own initiative. One might, therefore, as readily exhaust as stimulate young people's interest in it. This is, perhaps, evidenced by the varying reaction of the different classes of pupils. On the whole the girls' interest, which at the beginning was at a low ebb, was raised, especially that of the younger girls; while the boys' interest, which began higher, fell off slightly, owing, however, to the decreased interest of the younger boys. Thus the interest of the younger boys and girls became almost the same.

Great Men maintained their high place fairly well in the estimation of the pupils, especially of the boys, in spite of the enhanced interest in many other subjects. I tried to interest the pupils particularly in Livingstone, Lincoln, Gordon, and Gladstone, but while a few chose to speak on these, the lives of all sorts and conditions of men were narrated, from Buddha to Daniel Boone and from Hannibal to Houdini. In this, as in the other subjects, the pupils roamed over all space and time, so that altogether some hundreds of topics were discussed during the year. Forty-five great men were chosen as themes by seventy-eight pupils (fifty-seven boys and twenty-one girls), of whose speeches and essays I have a record. In their relative choice of men of action and of thought the boys were little changed by the year's work; 88% chose men of action and 12% men of thought, while the figures for all the boys in the school at the beginning of the year were 86% and 14% respectively. But the girls gave evidence of a remarkable change. Instead of 59% choosing men of action and 41% men of thought, the figures were now 76% and 24%. Was this change

due to the fact that while the literature was taught by a woman, the history and composition were taught by men to all these pupils? Doubtless it was partly accidental, due to their natural choice of familiar material. Not a single girl, however, chose to speak or write about a woman. The few leaders of thought and sentiment were all poets except Ruskin and Buddha (chosen by boys), and Knox (by a girl). The men of action most favored by these pupils at the close of the year, however, were superior to the favorites of the school at the beginning of the year. Their favorites now were Alfred (3 girls and 3 boys), Gordon (6 boys), Livingstone (1 girl and 3 boys), Shakespeare, Nelson, and Napoleon (2 girls and 2 boys each). At the beginning of the year Nelson and Napoleon had outdistanced all the others, receiving 28½% of all the votes. Though I said not a word about these men, but contented myself with speaking of others whom I thought more worthy the pupils' regard than even the brave Nelson, they were now chosen as themes by only 10%, while the great and good Saxon king and the noble Gordon were chosen by 15%. Livingstone, also, a prince among men, who had received but three votes out of 232 given at the beginning of the year, was now chosen by four out of one-third as many pupils. There is here seen an altruistic development proper to adolescence.

The position of Plants and Animals on the list is far lower than one would expect. If these High School pupils may be regarded as typical, it is evident that the interest in plants and animals is very little cultivated in the young people of Toronto at least. That the subject should have been placed higher in June by the majority of the pupils was possibly partly due to the increase in intellectual curiosity wrought by the work of the year (of which I saw evidence in the utterances of pupils), for it was not taken up in any class. If there had been time to talk with them about the important part played by fungi in the economy of nature, about the marvellous instincts of ants, bees and wasps, the social instincts of the mammals, the origin and history of domesticated plants and animals, the wonderful experiments of that plant wizard, Luther Burbank, the infinite adaptation of life to environment, the long enmity between man and the lower animals, and Isaiah's beautiful vision of the peace of all nature, I have not the least doubt that the subject Plants and Animals, now lifeless and unmeaning to them, would have aroused the deepest interest, and have been placed much higher in the list. It is, indeed, a question whether such humanly interesting and practical questions, along with appropriate observations, might not form the best sort of High School training in biology. At all events if the teacher of any science, or any other subject, would endeavor thus to arouse

interest at the outset, he would be rewarded by a much more active and intelligent response to his efforts than he is otherwise likely to obtain. Once the feelings are aroused and the imagination stimulated by the presentation of a subject in a large way from its human side, or in its interesting relationships, the pupils can be got to apply themselves to its details or to a more logically systematic presentation of it with energy and enthusiasm. The increased interest in both science and religion, which, as has been noted above, ensued upon such a treatment of these matters, affords illustrations of the truth of this view. If this were done for each subject by its teacher, and the pupils encouraged to write and speak about it from time to time, explaining and describing to the class, with the aid, where helpful, of the blackboard, there would be little need for a special teacher of composition.

The plasticity of the mind of the pupil of High School age was a revelation to me. Of course we are all supposed to know that the youthful mind is highly suggestible and susceptible to influences, but it is one thing to state an "of course" platitude and another to establish a truth by experiment with mathematical exactness. Such a result was hardly to be expected with so small a number of pupils; but the records show the working of psychological laws with remarkable clearness. Psychology, like meteorology, is not an exact science, but the fault evidently lies in the inadequate powers of the observer to grasp all the factors. The time will come when we shall have a body of psychological and pedagogical facts upon which the educationist may build with confidence. It is the duty of every teacher to hasten the advent of that happy day by thinking critically about his work with his pupils, and giving others the results of his observation and reflection. And it is the duty of governments to cease to hamper the teacher with detailed regulations and impersonal examinations, which set up false and narrowing ideals, discourage initiative, individuality, and originality, and make it next to impossible for the teacher really to educate. The classes I had the pleasure of teaching in the manner I have attempted to describe were not "examination" classes. I did have one examination class, the previous year, but I was hardly fairly launched upon a similar course in composition to that I have here outlined, when the class was promptly taken from me by the principal, who feared the effect of such experiments upon results in the matriculation examination. From his point of view he was possibly right, though I fancy the greater aim would have included the less. But the responsibility for the creation of such dilemmas lies with the people who tolerate the so systematized and regulated, so methodized and examinated machines as the so-called "edu-

cational'' systems of many of the states and provinces of this continent, of which Ontario is one of the chief offenders.

In teaching, as in other arts, it is the man behind the method that matters. A well-educated man, with a knowledge of genetic psychology such as his university should give him, and an enthusiasm for youth, may be safely left to evolve—and *be*—his own method. Any other method is artificial and mechanical, deadening to the teacher and ineffective to the pupil. One's method is the expression of one's personality. Let the universities see to it that teachers are well trained, and let governments and boards see to it that they are well environed and rewarded with adequate salaries and just promotion—and then *leave them alone.*

There is in this investigation much to encourage the earnest teacher; inasmuch as it brings home to him a clear realization of his influence, but likewise of the grave responsibility of his position in the community. The young mind *does* respond to the teacher's touch as the violin to the player. And it depends largely upon the teacher what music he draws forth from the marvellous living instruments placed in his hands.

ERRATUM. In the writer's Study in Interests, *Ped. Sem.*, Sept., 1907, p. 323, the following clause was omitted: *36 girls and 43 boys of fifteen.*

AN UNSTAKED CLAIM IN PSYCHOLOGY.

By HARRIET A. MARSH, Kalamazoo, Michigan.

Any one interested in child nature knows that boys' games do not follow one another in the apparent haphazard confusion suggested to the unsympathetic observer; for instance, on some certain day in spring one or two adventurous spirits will be seen playing marbles, and at once the boys of an entire city are busy. In doorways, on the pavement, up alleys and courts, the game is plied with an industry and energy that precludes the thought of any other amusement; pockets rattle as the forbidden plaything is smuggled into the schoolroom by owners too daring or too much belated to effect their removal, while grimy knuckles and dusty trousers are the theme of lament by many a long-suffering mother or aunt; and then, just as the situation seems almost unbearable, the scene is changed. The fiat of an invisible monarch has gone forth and the marble disappears as suddenly and mysteriously as it came, only to be supplanted by some new amusement which shall appear just as suddenly and mysteriously, to run, in time, its brief course, and then make way for the game next in order on the unknown dial plate. Boys, themselves, when questioned, are generally unable to give the reason or the cause of this order. Marbles,—or is it tops? appear on a certain Saturday in March. Thus far the boy vouchsafes as answer; but all other questions are met with "I don't know" or "All the other boys do so," or still further, "We always play this game at this time of year," and the would-be investigator tip-toes softly back to his own domain, puzzled and rebuked, to observe in silence the old, familiar routine which, year after year, pursues the same undeviating course.

Thus far we have stood in the very centre of the arena, facing a generally acknowledged mystery, but lurking in the corners and by-ways of this debatable territory, other forms, more shadowy and less familiar, are occasionally seen in profile as they glide from one turning to another, or beckon with illusive hand until the fascinated student wonders whether he is on the verge of discovery, or merely the victim of his own bewildered brain; and it is a few of these later problems I wish to suggest in this article, with the hope that some one of larger experience may offer a clue to their existence and influence, or relegate them to the oblivion they possibly deserve.

When the first warm days of March bring their general relaxation from closed doors and heavy wraps, children may be observed standing singly, or in little knots, before a doorway or fence, absorbed in the apparent discussion of some subject deeply important; as they move away, writing in chalk or pencil will be observed upon the plane surfaces presented. Generally quite crude, it often consists of nothing more than one name, as "Johnnie" or "Mary," but sometimes two or more names will be connected, and again there will be a number of statements, frequently quite immoral, and unaccompanied by any name. Then, too, there are the rude attempts at drawing the human figure which always appear at this season, and which often seem to resemble faintly the very faulty, old Egyptian mural decorations with which we are all familiar. At first, this tendency may be observable in only one or two districts, but at the end of a week or ten days it has spread over barns, fences, sidewalks, and the entire town. In fact, much less than ten days is required to accomplish this end. The tendency is spread or communicated with inconceivable rapidity from street to street or school to school until the whole city is infected.

In the classroom at this time, the children write notes with much greater frequency than at other seasons. From the first grade up to the sixth or seventh, this inclination is manifest and it is difficult to decide whether it arises from the mere muscular impulse to write, or from a desire to communicate thoughts and desires in the ascendant at this time of year. Material is afforded for both theories; as warmer weather advances the wave gradually recedes, leaving scarcely a water line by the latter part of April or the beginning of May, to return, however, with very much less force in November unless an unusually warm autumn delays its coming until the next month.

Why do children show this tendency most strongly at the seasons indicated, and what are the conditions which induce or favor its rapid communication? Or is it largely indigenous to each child and therefore not entirely dependent upon communication for its growth? How far is the weather responsible?

Then there are other tendencies which spread as rapidly; some morning an inclination to drum with the fingers, to whistle softly, to pick the face, or to do one of a thousand other things will manifest itself in a certain room, within a week it has spread over the entire city, even touching classes in which the strictest discipline is maintained, then it gradually dies down possibly to be supplanted by something else. Of course, every teacher knows the tremendous power of suggestion, and one can easily see how children in the same room

or even in the same building may imitate one another; but how do these waves or tendencies spread over an entire school population in a few days? A special teacher or supervisor in a large city, one who covers an area of forty schools every twenty days, informs me that these eruptions (if I may so call them) seem to travel faster than she can, particularly the inclination to write.

Then, too, certain teachers seem to be hindered by certain forms of disorder, which, apparently, cling to them wherever they go, while other forms equally flagrant and difficult to eradicate are lacking. For instance, Miss A. is a prey to spitballs, while in other respects her order is moderately good. Miss M. is beset with a tendency on the part of pupils to mark or disfigure desks. Occasionally some one habit will become traditional to a room or building, and generations of children may render it a sort of permanent institution. Here it seems probable that the tendency is simply communicated, term after term, from one set of pupils to another, but how did the habit first gain a footing? And why is it that a teacher who seems moderately capable of treating other troublesome habits cannot, or does not eradicate this? What is there in her personality that allows (or suggests) this habit to become permanent?

These instances are taken from personal observation, and may be multiplied almost indefinitely. Miss G., now married, taught a third grade room for years; her work was neither better nor worse than that of many another teacher in the State, but her regimè was sullied by a fatal tendency on the part of her pupils to write immoral notes. I was at that time an associate teacher in the next room and thus enjoyed greater facilities for learning the true state of affairs than any principal or supervisor could possibly do. We all respected Miss G., and nothing in her speech or manner ever suggested anything of the nature just indicated; yet this habit flourished in her classes term after term in a frightful degree. In the fourth grade these same children showed only the average normal tendency toward such expression. Did anything in Miss G.'s personality suggest this writing to the pupils? If so, it was certainly unconscious on her part; no one of her associate teachers ever seemed to believe differently.

Miss J., a music teacher of excellent standing, has a large number of pupils; her work is much hindered by a tendency on their part to go visiting out of the city just as they reach a certain degree of proficiency in their music. At least two June recitals have been broken up by this tendency on the part of young people who seem to enjoy their work and never exhibited an inclination to leave in this manner earlier. Does this condition just happen so, or does something in her suggest it to them?

Miss W., who has taught in the fifth grade eight years with tolerable success, is the victim of a fatal tendency toward spitballs which the pupils seem to lose upon promotion. Miss I.'s pupils (second and third grade) show an unusual interest in matrimony and kindred subjects; for instance, a spelling lesson was being developed. "Give me," said the teacher, "a sentence containing the word 'never.'" "I will never be an old maid" was the immediate response from a girl of eight. This is only one of many little indications that these children are thinking along these lines. Miss I., herself, pays due attention to these subjects out of school, but no allusion to them is ever made in the class, and in the next room the children seem to lose all knowledge of these matters. Does anything in Miss I.'s general manner and appearance suggest these ideas to these very young people?

But time fails me as this question presents itself in all its many aspects. We all know how one teacher may seem to influence all her pupils for good, while another, apparently better equipped and certainly better looking, is always "having trouble." The friction is not caused by what she says, exactly, nor yet by what she does, and yet there is that nameless something about her that sets every one's teeth on edge like an east wind. The flicker of an eyelash, the tilt of a nose, the droop of a mouth; these are the trifles that make our likes and dislikes, our friendships and our animosities, yet not they, never they, but rather the qualities and traits they indicate, or which we think they indicate. Every one is familiar with his mental process upon being introduced to a stranger; the lightning-like summing up of personality, the atmosphere which seems to invite or repel. Stock is taken in much less time than it takes to write about it, the balance is struck, and an opinion formed which its author rarely changes, no matter how much he may attempt to do so; for try as he will, a man does not succeed in lying to himself short of a long struggle, even when his motive is a good one, and it is a question whether another could lie to him if he observed and understood all nature's signals. For though man may be able to guide his tongue and masque the countenance when he wishes to deceive or mislead, there is the droop of the knee, the poise of the head, the *tout ensemble* of the whole body, in fact, which, if properly read, might indicate the real state of affairs. The child who has not yet become so unobservant as the adult probably sees these signals and feels their influence much more keenly than he and is rendered happy or uncomfortable in the presence of certain individuals without being able to tell why.

Without doubt there is much material of this nature that would render valuable service to education, and the subject

presents so many interesting phases that, certainly I have wandered far a-field in trying to note a few of the most familiar aspects it shows in the schoolroom, but I must crave permission to give one more illustration from my own experience in confirmation of the statement, that man could not be untruthful so easily if all nature's signals were observed and understood. Some time ago a debtor called at the home of the creditor to explain and apologize for his delay in not meeting an obligation. Upon the creditor's return his wife repeated the conversation. "Did he rub his elbow while talking?" asked the husband. "Yes," said the wife, in surprise, "his left elbow." "So I thought," replied the creditor. "He will never pay," and he never did. I have never yet been able to trace the connection between telling a falsehood and rubbing the elbow, and can only conjecture that certain portions of the body, less adept in untruthfulness than the tongue or the face (and therefore less under control) express a general embarrassment and sense of shame felt by the entire person. We all know how an individual, when confused, will sometimes rub the face, drum with the fingers or strike the door jamb with the toe of his boot, may not this movement belong to actions of this order?

But to return to our first proposition, there is another aspect to this question. Miss H. teaches music in a girls' school, she is well prepared and has fair ability as a teacher; her pupils are exhausted after a recital, and quite a number of them seem to be nervous wrecks at the close of the term. Miss H. herself is almost in a state of collapse at the close of the year, though she appears strong and well nourished. Her hours are no longer, her responsibility no greater than those of the average teacher, yet parents dread the closing exercises of this school, and not without reason.

In the same town is Miss F., who (I should judge) is about the same age, her physique appears almost the same as Miss H.'s except that she gives indications, to use her physician's expression, of being more "highly strung," her hours are much longer, her responsibilities greater, yet her pupils are generally better in health at the end of the year than at the beginning, indeed, last autumn, nine out of twelve new pupils took up her work as a "mere tonic" or a "rest," several of them being public school teachers whose health demanded a change of occupation.

A few weeks ago, the two ladies were engaged in an organ recital together. At its close, Miss F. went to bed in a state of exhaustion from which she did not fully recover for three days. She is accustomed to entertainments of this nature and always appears to work calmly and well, but, in her own lan-

guage, "this was the most fatiguing experience of its kind that I remember. Miss H. came to the organ about two o'clock in a state of great excitement; in half an hour she had me so nervous that I could not sit still, but at the close of the entertainment she seemed calmer, having transferred much of her nervousness to me; I was so exhausted that it was difficult to walk home, and I did not recover from my fatigue for several days."

Miss M. is principal of an eight grade school in L. She is an easy-tempered woman, rather inclined to let minor detail go at times, bringing discipline up with a good round turn when the effect of inattention begins to show itself. She is quite conscious of this fault and tells me that when, after a spell of this sort, she goes to school with the determination to be more vigilant in regard to the minor matters, her state of mind is felt, apparently, as soon as she crosses the threshold. Hall order tightens up, seemingly of itself, the refractory pupil is quiet and studious, while the cadet teacher, who has seemed unbearably stupid and careless during the past week, is now a model of attention. She assures me this has been her experience again and again; the reproof she intended to administer, the advice she thought to offer, are, in five cases out of ten, never given, because the occasions for them seem to melt away in the night, and matters assume their normal sway as soon as she has made up her mind to act. What suggests the change? Her manner? There has been neither time nor opportunity to speak to delinquents concerning their shortcomings; and in the case of the music teacher just cited, how far does Miss H.'s uncontrolled nervousness react upon the pupils? To carry the question still further, how far may the general exhaustion of pupils so largely attributed to overwork be the suggestive influence of a nervous over-wrought teacher?

But, at best, the subject is shrouded in mystery. Aside from the aspects considered in this article, there are many others, among them may be mentioned the good will of a store; and also that general atmosphere, which, irrespective of speech or action, envelops with more or less density the individual in every walk of life, to affect with greater or less keenness every one coming in contact. How is it that in the presence of some persons we feel the noblest ambition, are conscious of our highest and purest thought even when no direct word is spoken on these themes, while with others we are conscious of a general relaxation? Is it not possible that in our rapidly changing condition, nascent qualities now but little understood, are developing into influences of awful potency among which the teacher may find his most valuable or his most damning assets? And is it not possible, that while the attention is given to

scholarship and culture, the teacher of the near future may also find himself subjected to some test that shall seek to determine the influence of his physical condition, of hidden occupation and of secret, unexpressed thought and desire upon the pupils he essays to teach.

The entire subject is rich in possibilities which only the future can disclose. Perhaps the most suggestive topic herein referred to is that of seasonal games, the treatment of which might be made exceedingly simple and easy. Suppose, for instance, a large number of teachers should make observations along this line during the year with the intention of compiling them at its close, eschewing carefully all that is already written on this topic, and confining themselves solely to personal experiences. Perhaps a group of short and very simple questions might be submitted as an aid to this work, but whether this plan were followed or not, the slightest effort in this direction could scarcely fail in securing rich returns.

Teachers, generally, are interested in this line of observation, in fact, almost every one has observed these tendencies. As illustrations of what teachers may profitably observe the following reports may be cited: A teacher of experience in New York says: "In April, May, and sometimes as early as March, children mark everything within their reach. They copy the doctor's sign upon the walk, draw and name pictures of their schoolmates, and, I am sorry to say, often write things which do not bear repetition; this applies to the boys; the girls seem to be given more to the writing of notes, a very few of which I have even examined."

The director of a normal school writes, "I have noticed that children have an inclination to write and draw pictures out of doors in the early spring, particularly when we have had a long, cold winter with considerable snow. The thing which starts this marking of sidewalks in the early spring is the tendency of making circles on the sidewalk for the purpose of playing marbles. This gives suggestion for other things. With the smaller children, pictures of houses and people are very common; with the older children, the names of classmates are frequently written."

The question of marbles is certainly interesting. A. M. (English, age 88) says, "When I was a boy, marbles were played much more frequently by men than by boys. This was in Sheffield, Birmingham and (I think) Manchester, also. In the two places, Birmingham and Sheffield, the men commenced in the spring and played whenever the weather permitted. Monday afternoon was especially devoted to this game, and the men refused to work at this time."

The boys in Kalamazoo began marble playing this year the

first Saturday in March, as in Detroit. One boy being asked why playing marbles started at this time, said, "Why, some of the birds are come." Another replied, "All the stores have marbles in the windows." In Grand Rapids, boys play aiming games with marbles all the year round.

A director in a normal school writes, "Children certainly are inclined to play seasonal games. There is an outbreak of marbles and tops as soon as spring comes. I have also seen an inclination to the same games during the last of October and the first of November. Such games as Fox and Geese are always played at the time of the first snowfall."

B. C., a teacher in northern New York, says, "Children play marbles in the spring and also in the winter if there is too much, or not enough, snow for other games." In the winter they play 'Run, my sheep, run,' 'Dog and deer,' 'Fox and geese:' 'Stealing sticks,' 'Hocky,' 'Checkers' and 'Basket Ball.' In summer, 'Hide and seek,' 'Cutting cheese,' 'Cross tag' and 'Wood tag.' It is usually a sign of spring when one sees marbles and tops appearing, and as one drives through the smaller villages, to see young men and boys playing 'Catch.' Favorite spring games are Prisoner's Goal, Duck and Drake, In and out the Window, Skinny in a hole. In the fall, Foot Ball, and New York and Pennsylvania seem to be the favorites.

REFORM OF JUVENILE CRIMINALS.

By ARTHUR MACDONALD, Washington, D. C.

Honorary President of the "Third International Congress of Criminal Anthropology," of Europe.

The best methods of reforming young criminals are more or less a matter of opinion. For the causes of crime have not been sufficiently determined, so that remedies may have an adequate application.

To treat a disease, without knowing its cause definitely, may be the best that criminology can do at present.

As in physical so in social disease, the individual subjects must be studied, if the real causes of crime are to be found. Such professional and scientific investigation is the only path to the root of the matter. But such study has barely commenced in our country. Not merely the punishment of crime, after it has been committed, but, as Pestalozzi says, the education of man to do good and the killing of the cause of crime, are what will protect the community.

VALUE OF SAVING ONE CHILD.

Every child kept from being a criminal wins for the State a good citizen, but every child becoming a criminal through the State's neglect of conditions leading to crime, is a vicious parasite, and whether free or in prison, feeds upon the people. The preventing of one child from going wrong may save the State the cost of some notorious criminal trial, and protect the community from reading the details of the life and acts of some moral degenerate or pervert, tending to make him a hero rather than a culprit.

SIN OF MODERN TIMES.

Any description of a crime, that tends to palliate it or make it interesting, or associate it with dignity or respectability so that the resultant impression is one of interest in, or acquiescence in or condoning the evil, is the great sin of the press, stage, and literature of modern times. Such publications are a positive evil to society, on account of the law of imitation; and, in addition, make the criminal proud of his record, and also develop the morbid curiosity of the people. It is especially the

mentally and morally weak who are affected.[1] But any description of crime, that makes you detest the crime, is moral in its effect, even though it involve objectionable details.

Children Should Not be Left to Themselves.

Prevention of crime concerns the care of the young, and especially those who are criminals, vagabonds, paupers, homeless, or without proper home, or in any way neglected by being left to themselves. The child is not master of itself, but its enviroment controls it. Perhaps in as many as nine cases out of ten, the child will be what its surroundings tend to make it.

Two Classes in Moral Danger.

There are two classes of children in moral danger (1) those who can be saved by ordinary pedagogic means, and (2) those who have need of some special method of reformation.

There are some children, who without being disposed to do evil, are led astray by their enviroment, sometimes it is bad companionship, sometimes their own parents force them into vice and crime.

Signs Suggesting Viciousness.

There are other children who seem to be vicious by nature. These often present a characteristic appearance. There is a certain animality in the face, the eyes are without expression, the forehead is low or depressed, the jaws are very large, the edges of the ears are rough, the ears extend out prominently from the head. Sometimes the complexion has an unhealthy color. Such children may be too large or too small for their age; or they may appear older or younger than they are. Some do not look you straight in the face, but have a stealthy, oblique or variable glance. Some stutter, hesitate or become confused. These defects are only signs and of course do not necessarily mean the existence in the person of the things signified. They mean that such individuals will at least bear observation.

Cynical Children.

There are children who advertise their corruption, treating with effrontery whoever interrogates them, laughing at the questions, manifesting cynical pride and glorifying themselves.

One learns to know the hypocrites and sneaks who cry with

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[1] "Man and Abnormal Man" (by writer) Senate Document No. 187, 58th Congress, 3rd Session, including a study of children, in connection with bills to establish laboratories under city, state and federal governments in the study of the criminal, pauper, and defective classes, with bibliographies.

This document may be obtained on application to any United States Senator or Representative.

effort and protest their innocence, without appearing too desirous of escaping justice. It is easier to recognize the true character in children from 10 to 16, than in those younger.

Signs, Suggestion, Sincerity.

A clear voice, open toned, well pitched, even under strong emotion, is a good sign. If the look is direct, a little elevated, if the eyes are directed straight at you, if the mouth has no contraction, if the arms, hands and legs are in a state of repose, these are signs of a sincere nature, but only signs.

It is important to distinguish whether a child is bad by nature or whether its badness comes from its enviroment. A child might commit several serious crimes, being lead astray by its surroundings, and yet not be bad by nature, especially, if at the time, it did not recognize the gravity of the crime, but later regretted it. Such a child should never be placed in company with a child, who to all appearances, is bad at heart.

Cases of Improvement or Reform.

In order that the reader may study the cases[1] for himself, those where the treatment was successful, are first given, and then follow cases where reform proved impossible.

Improvement Through English Reformatories.

The reformatories and industrial schools of Great Britain have improved three-fourths of their inmates as the following table indicates.

Great Britain.	Reformatories.				Industrial Schools.			
	Improved %	Doubtful %	Relapsing %	Unknown %	Improved %	Doubtful %	Relapsing %	Unknown %
1882	74	5	10	11	80	6	3	11
1883	72	6	11	11	80	5	3	11
1884	74	6	10	10	80	6	3	10
1885	75	6	10	9	81	5	4	10
1886	75	7	10	8	83	5	2	10
1887	77	6	9	8	84	5	3	8
1888	76	5	11	8	82	6	3	9
1889	75	6	12	7	83	5	3	9
1890	75	6	11	8	84	4	3	9
1891	77	5	10	8	85	4	3	8

Two Cases with Hereditary Taint.

Girl, 13. She was thirteen years of age. Her father was

[1]Selected from special investigations.

nervous and also had an affection of the heart, but he was a sober man. Her mother was very nervous, subject to hysterical attacks. One brother died of croup, another of meningitis. She was of average height, sallow complexion, black eyes, dark brown hair, had narrow and receding forehead, ears well formed, but a little large. She knew how to read and write, but had no taste for study. She did not like to sew. She was a coquette, dressed with much care and was cleanly. But she was giddy and hairbrained; she talked constantly, incoherently and without sense. At times she was unconscious of what she said. She was very affectionate towards her parents and while she liked her brother and sister, she struck them often.

Good training would help this child sufficiently to live properly in the community.

Boy, 11. The boy was eleven years of age; he had a flat forehead and nose; his ears were almost without lobes. He was very limited in intelligence and could barely read and write; was filthy in speech and so violent and dangerous that he needed close watching at school.

His brother was insane and his father was an alcoholic and had served several times in prison for violent assaults. Much might be done to help this boy, but not without taking him away from his surroundings.

Improved by Reformatory.

Age, 12 years; length of head 179 m.m., width 160 m.m., circumference of chest 69 c.m., height 137 c.m., sitting height 70.5 c.m., arm reach 141 c.m.[2]

At the right corner of the mouth was a linear cicatrix 2 c.m. long, prolonging the line of the mouth.

Nothing was known as to antecedents. The family were day laborers, living in an industrial village; their morality was doubtful; they allowed their children to be vagabonds and thieves. Arrested, the boy was acquitted and put under the charge of public charity. This boy had contracted bad habits, which were so deeply rooted, that he could not be sent to a family. He was sent to a reformatory. After two years here his conduct was modified sufficiently to be given employment outside of the institution.

Reformed Boy Two Years Life in Reformatory.

Boy, age 15, orphan; length of head 180 m.m., width 156 m.m., circumference of chest 74 c.m., height 143 c.m., sitting height 71 c.m., arm reach 146 c.m.

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[2]When the arm reach is greater than the height, it is generally regarded as a defect.

This boy was very healthy, he had been to school and knew how to read and write. He was brought up by his aged and feeble grandfather who lived in a section where prowlers were numerous, intractable and brutal in disposition.

This boy was taken from these unhealthy surroundings and sent to a school for correction, where his bad tendencies were put under control in two years.

Saved by Reformatory.

Boy, age 15 years, orphan; length of head 181 m.m., width 168 m.m., circumference of chest 73 c.m., height 151.5 c.m., sitting height 76.1 c.m., arm reach 150 c.m.

The boy had good health. He was educated by an uncle. He could read and write, was somewhat pretentious. He was placed in domestic service, but he soon began to steal, justifying it by a most revolting cynicism. His moral sense seemed false; it was necessary to keep him from temptation, and to attempt to set his conscience aright. He was sent to a reformatory where he could make preparation to enter the army, otherwise he might be likely to fall back into crime.

Two Vagabonds Reformed by Family Mountain Life.

These were two brothers seven and ten years of age.

Boy 1. Father dead; length of head 164 m.m., width 145 m.m., sitting height 55 c.m., height 107 c.m., arm reach 102 c.m.; thin lips, pointed chin.

Boy 2. Length of head 175 m.m., width 150 m.m., sitting height 68 c.m., height 124 c.m., arm reach 120 c.m.; slight scar on left eyebrow.

These two boys were healthy and vigorous, presenting no defect of hearing, seeing or speaking, no anatomical stigmata. Nothing could be found as to their antecedents, except that the mother had rickets, stuttered and was very limited in intelligence, leading a haphazard life, making her children beg.

These children never went to school; but were very active as vagabonds in several communities, where they were a pest, sleeping in barns. They would pass by food and fruit, but would steal a watch or other object of value. Finally they were arrested and imprisoned. A committee of a local charitable society, intervened and had these boys taken out of custody and put under the care of a good man. But they escaped and continued their voyage home, a distance of 30 miles. They were arrested the next day while in the act of stealing.

When the younger one was questioned as to his acts, he looked at his brother and at the questioner, raising his shoulders a little with a sense of superiority and pity. What shall be done with these boys who intend to live as they please.

These two vagabonds were sent to live with an honest mountaineer, to have a bed, a place at table to eat regularly and to attend school. After four years of this life, those boys were completely transformed and reformed.

Hopeless Cases.

In vicious and criminal children, the cause of their degeneracy can often be traced to hereditary antecedents, yet in some cases, as we have seen, careful but severe treatment will save them, where otherwise their bad instincts would lead them to destruction. If, however, such treatment through neglect of parents, or others, be delayed until the child is somewhat grown, it will in most instances fail, for criminal taint has had opportunity to develop and permeate the character. Such a child is morally frail, with little power of resistance and liable to fall under the least temptation. A few seem to have a sort of blindness and want of comprehension, being absolutely under the sway of their instincts and impulses. For these there is little or no hope.

Incapable of Reformation.

Boy, 14 years of age, father dead; length of head 170 m.m., width 155 m.m., height 150 c.m., sitting height 77 c.m.; he had a club foot and congenital paralysis. His father was an alcoholic, dying at the age of 35 of pleurisy. The mother had good health. She was treated brutally by her husband, while with child. Two other children, a boy of ten and a girl of seven, showed nothing unusual. The boy's paralysis did not prevent him from being active. He could read, but wrote with difficulty, though he had attended a number of different schools, private and public. He became involved in an immoral affair which was his undoing before the court where he served as a witness, and gave the details of the scandal. His imagination was perverted.

The child was sent to a reformatory, but without success in treating him. He attempted murder in the street. The defect in this boy was aggravated by the circumstances of his life, it was impossible to reform him.

Girl, Moral Degenerate.

Girl. One (age 13 years) had an extraordinary physical development for her age; the mother had married again. The girl was brought up by grandparents, who lived in a factory town. The child early showed vicious instincts which frightened the family. She was arrested for a series of thefts of goods displayed at stores. It was a case of precocious puberty. She went to a convent with the formal promise that she could leave

after three months. As the time approached, she declared if she was kept any longer she would set fire to the building. Then she was placed in several institutions, but all were glad to get rid of her. At one convent where she remained 48 hours she refused to eat, pretended there was something the matter with her eyes, so she could not sew. At another place where she remained but one night she frightened the sisters and boarders by twisting herself so when laughing that they thought her insane. At the convent where she remained some time, she acted still worse, she would attack the sick, scandalize the personnel by her words and jests. She was vicious by nature. She suffered from a cerebro-spinal trouble and excessive sexuality.

Relapses Into Old Ways.

Boy, 13 years of age; orphan; large for his age, he could neither read nor write, and had little mental capacity. His father was a habitual criminal; his mother had a doubtful character. He was cared for by uncle and aunts, with little means. He showed brutal instincts, stealing jewels and then breaking them to pieces. He was arrested and taken before the court. The local society took him in charge and found him a home in a good family; in two years though not reformed he was somewhat changed for the better, but he went back again to his old ways, himself recognizing that he could not adapt himself. After being returned by his guardian family he began to steal.

Boy with Hereditary Taint.

The boy was eleven years old; his father was nervous, violent, a drinker and gambler. His mother was extremely nervous, becoming exceedingly angry on the least provocation.

He was an apt pupil, when so disposed. But he was lazy, greedy, untruthful and jealous; he played truant at school continually, declaring he had had enough of school. For two months he went out every evening attending balls and other entertainments, not returning until after eleven o'clock. In the day he did not wish to do anything; he was always away. It appears that his father when a boy had the habit of sleeping outside. The son had little affection for his mother; he did not wish to kiss her, nor have her kiss him. Brutal and treacherous, he would strike his sister, fourteen years of age, defective in many ways and as bad as her brother. He would abuse every one and become violently angry, threatening to break everything. Every effort was made to help this child: nothing could be done.

Degenerate Girl with Bad Parentage.

Age 15, mother dead; length of head 171 m.m., width 151 m.m., height 166 c.m., sitting height 85 c.m., arm reach 168 c.m. There was a scar on the upper right jaw, another on the middle of the left jaw.

The father was an alcoholic, and led a bad life. The girl was large and had the appearance of being 20 years of age; had excellent health, with the exception of an enuresis.

Reared by an uncle, she was put under the care of a good pastor, where she proved to be impossible. Arrested for theft, she was sent to a convent.

This is another case of cerebro-spinal trouble, and excessive sexuality. She was sent to work in a manufactory, but she left and returned telling a story she had invented. In spite of all the efforts to reform her she did not grow better. At the last convent she lived in, she broke a door to regain her liberty.

Impulse to Run About Prevents Reformation.

Boy, age 16, orphan; length of head 187 m.m., width 144 m.m., height 156 c.m., sitting height 84 c.m., arm reach 158 c.m. Eyebrows near each other; dimpled chin; scar at end of chin; tattooing on left wrist, asymmetry of face.

This boy was reared by a brother-in-law. He was employed in a hotel. He stole three dollars from one of his fellow servants. He was placed with an employer in the city and for three months with another employer, where he saved a little money. Unfortunately his impulse to be on the go, brought him into the street, where it was not long before he was arrested.

Vagabond Nature too Strong.

Boy, age 17, father dead; length of head 177 m.m., width 149 m.m., height 150.3 c.m., sitting height 79 c.m., arm reach 155 c.m., health good.

The mother earned her living with great difficulty. Her boy in company with an Arab was arrested for being a vagabond. He appeared gentle, maleable and manifested good intentions. He was placed in a family of a well-to-do farmer, who seemed disposed to aid him as best he could. For a few days everything passed quietly, but the boy associated with all the vagabonds coming that way. He was returned to his mother, who found him a place with a former employer. She had little hope that he would continue to do well any length of time.

Prison Companionship Caused Relapse.

Boy, age 18, father dead; length of head 175 m.m., width

156 m.m., height 172.3 c.m., sitting height 93.6 c.m., arm reach 180 c.m., good health.

Arrested for theft, he was sentenced for the first time to three months in prison. After serving his time, his mother died. He was placed with an employer where he gave satisfaction. But he met a confirmed criminal (recidivist), with whom he had been in jail. He suddenly left his employer to take up with his former prison companion.

Bold Robber.

Boy, age 13, length of head 165 m.m., width 152 m.m., height 135 c.m., umbilicus was prominent. This boy had a badly shaped palate (pointed arch); he had an enuresis. When eight years old he was very sick. He spoke with difficulty, half French and half patois; was wholly illiterate. He was placed in service with several employers. His father was a grave digger. The boy was very backward mentally. There were five other children, about whom nothing is known. This boy was sentenced to a house of correction for 19 years, on account of a number of bold thefts; getting upon the roof, opening the scuttle and going down into the house.

Children Needing Protection.

There are three general classes of children, especially needing protection and study: Abandoned children, vicious children, and criminal children.

The abandoned children constitute the greatest number needing care. They consist of:

1. Foundlings whose parents are unknown. 2. Those deserted by their parents. 3. Paupers, without parents and without means of subsistence. 4. Those whose parents through disease or physical or mental incapacity, or detention or sentence for crime, cannot care for them. 5. Children where parents expose them to vagabondage, begging and idleness, or children who through bad treatment are ignored.

By vicious children are meant not only those who may be vagabonds or beggars, but such as do not submit to their parents and so withstand education, as unruly children in school.

Criminal children, whose age of responsibility may vary.

Some Methods of Reform.

These methods of reform are in accord with the opinions of many engaged in practical work and are offered merely as suggestions.

Protection of Child Before Birth.

It is important to protect the intra-uterine life of the child,

special care should be given to the woman with child, by, maternal care, by relief at domicile, by arrangement of work: by creation of asylums, and of private maternities, and by examination into the paternity of the child.

Protection in Early Life.

The conditions of social life often do not permit taking a child from its mother and she is not always capable of giving the child the necessary care; there should be established institutions for rearing children according to the best methods.

School Life.

Hygienic principles should be established in the schools. No teacher, according to a French specialist, should have charge of more than 20 or 25 pupils. A physician or specialist should be present at the formation of the classes. He should always examine any pupil showing himself incapable of adaptation to the conditions.

Juvenile Criminals.

Young vagabonds, less than 16 years of age, should not be committed to jails or police stations, or houses of arrest, but should be sent to an institution for observation, to determine what to do with them. Such inquiry should be made by a commission, one member at least being a physician.

The youngest should be assigned to families; the others should be sent to some reformatory school, or to a clinical school, whose head should be a physician or specialist. Adolescents (16 to 20 years of age) should be sent to some reformatory, without fixing in advance the length of time they should remain.

Lombroso's Method.

According to Lombroso, one of the best methods of prevention for the "born criminal," is moral nursing; that is the rearing should commeuce in the first months of life, in the country, on the farm, in colonies, out of the reach of criminal association. A fight against alcoholism should be carried on by associations, by religious, political and temperance societies, by journals, etc., all these agencies should be in connection with medical treatment.

A PRIMARY SCHOOL IN WALES.

By Julie Caroline O'Hara, Cincinnati, Ohio.

From Llandudno, a very accessible watering-place on the northern coast of Wales, it is a side-trip of but a few miles to Conway, the ancient walled town of the Welsh. At no great distance from the ruins of Conway Castle—unsurpassed for beauty in Wales with its circular towers and commanding battlements—there stands a low, broad building of one story, with very thick walls and small near-sighted looking windows placed high up beneath the roof. This structure, so unlike any school I have ever seen in America or in Europe, is the "Conway National School" containing the "Infant Department." The building is manifestly centuries old, and from its antique appearance it may be, for all we know to the contrary, a schoolmate of the Castle itself, which was built by Edward I in 1284. In its young days it is evident that uses other than education had claimed this structure, as it could never have been designed for its present purpose.

Though it was the fifteenth day of July, school was still in session. But the climate in the British Isles is more moderate than ours, so the hardship of keeping school in mid-summer is not what it would be in this country. My visit was purely accidental, and I wondered how I should be received in this out-of-the-way spot. When the door was opened at my timid knock, I was confronted by about one hundred and fifty pairs of curious eyes of little Welsh children who gazed at me agape. The Head Mistress was most gracious, and cordially invited me to visit the school and remain as long as possible. Her domain consisted of what would equal three large schoolrooms placed side by side with no walls to separate them from each other. There were desks and benches so arranged that they faced the door and constituted three different classes, each containing perhaps half a hundred children. Over each division there presided a pupil-teacher, and all the time there were three distinct lessons or recitations going on simultaneously. The Head Mistress had her table and chair at the extreme right flank of the big room, and from this point could command a view of the entire school. Immediately one was impressed with her ability as a teacher and her quiet skill in a pleasant system of school-management. Everything worked smoothly

without friction in spite of drawbacks and poor equipment. Without perfect unity it would have been impossible to effect the successful training of the pupils which was everywhere manifest. The noise alone—had there been any—of so many children, with such numerous distractions to their attention, would confuse the average American teacher. In addition, the ventilation was entirely inadequate for over a hundred little breathers. No one was to blame for this; it was merely due to the old building, with its queer small windows far above the head so ill adapted for light and air. And then, I *did* sympathize with the teachers in that they could not reach the window-sills—those refuges of the primary teacher for frog's eggs, plants, tree-buds, or the dozen other objects which lodge most naturally thereon. The poor ventilation, however, I am quite sure was not such a trial there as it would be to us Americans, for no where in Europe does fresh air seem to be so essential as it is to us. It is with difficulty that the traveller restrains the foreign servant from almost hermetically sealing his sleeping apartment—so, what seems a hardship in one country may be the reverse in another.

The breadth of the vast room afforded a side frontage. This was left empty, save for the piano which stood in the middle. There were also several reading charts distributed about the room. The British flag was displayed where all the classes could plainly see it.

This school corresponds to what would be called a "public school" in America. The Head Mistress explained that the "Infant Department" over which she presided was divided thus:

Division III for children three and four years old.
Division II for children five years old.
Division I for children six years old.
Standard I for children seven years old.

The babies in *Division III* were somewhere else, in a room around the corner; I did not see them at all. But the opportunity was given me to examine the work of the other classes at the year's close—and exceptionally fine work it was. The reading from the book by very little tots was extremely good. They read with expression and understanding, and were able to sound the words as well as call them at sight when their teacher moved her pencil about at random. They are taught the alphabet from the beginning. The reading of the elder children was equally good. Division II and Division I each read two different Primers in one year, while Standard I reads two different Readers. The course for Division III or the Babies' Class is:—"The names and sounds of capital and small letters and words of two letters."

I was not so fortunate as to hear any oral number work, but one of the classes was doing "sums" (they still use that old-fashioned expression) on slates. The Head Mistress gave me their Syllabus for the year's work, and from it I quote verbatim the course in number.

"Division III.	Analysis of numbers 0 to 5.
	Learn figures 0 to 9.
	Count numbers 1 to 50.
Division II.	Analysis of numbers 0 to 9.
	Notation of numbers 0 to 19.
	Tables to 2 times 12.
	Counting by two's and three's to 24.
Division I.	Analysis of numbers 0 to 19.
	Simple addition sums on slates.
	Tables to 3 times 12.
	Notation to 100.
	Counting by twos, threes, fours and fives, as far as 10 twos, threes, fours and fives.
Standard I.	Scheme B, as in Schedule I for St. I.

Judging from the amount of work required by this syllabus we may infer that number is not purely "incidental." And I have not a moment's doubt that the children were as thorough in this branch as they were in everything else. As to whether the children were made little machines by this process, or not, I do not attempt to advance any opinion.

This is a list of the branches given in the order they appear in the Syllabus. "Reading, Number, Writing, Object Lessons (including chiefly nature-work), Varied Occupations, Needlework (girls only), Drawing (boys only), Singing, Recitation, Drill (corresponding to our "Physical Culture"), Form and Color and Geography (taken only in Standard I and including "The Meaning and Use of Plans, Maps and Points of the Compass")."

Of course, during a brief visit of not more than one hour it was possible to see in operation but a few of the branches named. However, they showed me some reserved work—sewing, they hemmed on dotted muslin, each dot showing where to put the needle; drawings, which the children had colored, as well as free hand drawings, and writing of a whole class. The children's handiwork was up to a high standard of excellence. The entire school sang in concert, to piano accompaniment, an action song about the Chinaman. The tone was pure and sweet and the quality of the young voices was exquisite. One class was busy during one period with block-laying. As was natural, the little architects were building a reproduction of Conway Castle, a noble model to copy, and in addition, they constructed its ramparts and the walls of the

town. Another division occupied itself by writing sentences from the dictation of one of the pupil-teachers. While yet another class built words from sounds,—ick, thick, sick, tick, pick, etc., the teacher giving the initial sound while each child had "ick," at the top of his slate and would form his own word and write it. Their penmanship was beautifnl. The letters were very large, the small letters being at least one-half inch in height. Their slates were ruled with double lines and the writing touched these lines with uniform regularity. The eldest children used a "semi-upright copy book." But for the daily work slates were in use. This is not surprising, as, in this region close to Bangor are the Penrhyn Slate Quarries, the largest in the world.

The children were rustic in appearance, reminding me of Wordsworth's "little cottage girl" in the poem "We are Seven," which, it will be remembered had its source in a visit of the poet to North Wales. All of us recall the lines:—

"And two of us at Conway dwell,
And two are gone to sea."

These children in this Infant School appeared to have the same simplicity which the Lake Poet so admired in 1793 in the little country maiden. All of the little ones here were likewise very neat and clean.

With one's mind dwelling upon the poem, it seems to strike a discordant note to return to a train of thought so foreign to its melody as is embodied in the word *discipline*, but, the poetic and realistic do go side by side in life in spite of our protestations, and I must from necessity speak of the order. According to the common acceptation of the meaning of that term, the order was absolutely perfect. During the whole of my visit I saw no squirming, wriggling little culprits, pinioned by the eye of the teacher, and I took the mental note that their temperament differed widely from that of our American children, and that ideas of respect, order and obedience seemed to be traditionally imbedded in their very nature. The whole system of order was seemingly made upon a military basis. The children worked like clock-work, they stood like militia, they marched like drum majors,—and there was not an incorrigible eye-lid in the whole battalion, one hundred and fifty strong. All of the classes sat on benches which had no backs to lean against, and I felt sorry for the girls and boys to be obliged to sit all day in that uncomfortable position (but perhaps this was their method of cultivating backbone). I should consider it torture were my little ones required to sit in this manner before me day by day with no opportunity for relaxation. The old-world ideas of bringing up children differ so widely from ours. I in-

quired of the Head Mistress whether they were punished with the rod, and she replied, "Only for bad morals."

Also, many other things she graciously explained to me from time to time. While I saw no new work nor any actual teaching, I was enabled to carry away certain definite impressions, owing to her lucid explanations which supplemented what I actually did see. It was so near the close of the year that everything was review. They have only the month of August for their summer holidays or their "long vacation." The children in the school are for the most part native Welsh, and must first be taught the English language. She said that occasionally her pupil-teachers were likewise Welsh. It is necessary for pupil-teachers to have four years of training before their preparation is completed. I inquired whether in Wales here they were quick to embrace new ideas in education, or whether they were inclined to be conservative in that respect, and was told that they too, had at various times been carried away with fads, and that they had also tried kindergarten methods to excess, but found that the essentials were being neglected, so they had gone back to thoroughness. If they sent children to the next higher school, not well equipped, a complaint was made that they were not prepared for the work; thus this Primary School is required to maintain a very high standard.

Equal to my keen interest in the workings of a Welsh school was that of this cultured teacher in American education. She was eager to know of our ideas and methods, and crowded in as many questions as possible, which I endeavored to answer as satisfactorily as I was able. She even urged me to give a lesson for them, but I was obliged to decline doing so, because —to quote Cæsar, "the shortness of time was so great," and my visit to Conway was very transient, while the Castle and Plas Mawr were awaiting me. As it was, this unexpected visit had curtailed my time for those sights, but I felt more than repaid by it, for, I can hardly put in words the fascination which seized me upon seeing work corresponding to my own, in a strange land about which I had never heard a word—from a pedagogical standpoint. It was an experience no less absorbing in interest to me, than was listening to a debate in the House of Lords on the Irish Land Bill, or hearing a lecture on Spinoza by Kuno Fischer at the Heidelberg University, for it seemed more personal to myself. I always take a special interest in every child about six years old, and feel as if it in some way belongs to me, because I teach little children of that age.

Reluctantly leaving the school, after having compressed with almost feverish enthusiasm just as much information as I could into one hour's brief time, I hurried over to Conway

Castle. Even its storied ruins could not replace in my mind the thoughts and impressions which I had carried away relative to the school. Wandering about in the Great Court of the ancient feudal fortress two reflections were uppermost in my mind; first—the narrow line of divergence between this school and those of our own country, and second—the unquestionable excellence of this school situated in a remote spot in Northern Wales.

THE SECOND INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.

By Anna J. McKeag, Wellesley College.

The second triennial Congress on School Hygiene, which met in London, August 5-10, brought together physicians, educators, health officers, architects, engineers, and members of educational administrative bodies from all parts of the world. The interest of the present government in the purposes and aims of the Congress was shown by the presence of the Earl of Crewe, Lord Fitzmaurice, and other members of the Council at the opening meeting. The sessions of the Congress were held at the University of London and adjacent institutions. Sir Lauder Brunton was President of the Congress and among the presidents of the eleven sections into which the Congress was divided were Sir James Crichton-Browne, Professor William Osler, Dr. T. J. Macnamara, and the Earl of Crewe. English, French and German were the official languages used.

Four general meetings for set discussions were held. At the first of these, which was devoted to the discussion of the subject, "Methods for the first and subsequent medical examinations of school children," Dr. Leslie MacKenzie, of Scotland, presented a clear statement of the objects, method, and extent of medical examinations. Dr. MacKenzie believes that the medical examination ought to be "limited to the health conditions that fit or unfit the child for his school work." He would exclude details of purely scientific interest, relegating these to special investigations. He includes, however, certain facts in the social history of the child: occupation of the father or mother, housing conditions, and out-of-school occupations of the child. The schedule of examination includes, besides the points already mentioned, attendance, mental capacity, physical exercise, personal appearance, cleanliness, height and weight, chest measurements, eyes, ears, nose, throat, teeth, and deformities and diseases. Several of these are filled out by the teacher. There should be three examinations, one at admission, one at eight or nine, and one at eleven or twelve. A skilled physician requires only about five to ten minutes per child for such an examination. Professor Mery, of Paris, who followed Dr. MacKenzie, advocated an examination three-fold in its purposes: Anthropometric (weight, height, thoracic

measurement, respiration); physiological (sight, hearing); medical (organic-anatomical: general condition, teeth, skin, circulation, lungs, spine). Children found to be physically defective should undergo a subsequent examination by the specialist needed in their individual cases. Measurements should be made each semester by the teacher under the direction of the school physician.

At the general meeting on the subject of "The Lighting and Ventilation of Classrooms," the paper presented by Sir Aston Webb was largely a report on the regulations now enforced by the Board of Education in regard to the hygienic requirements of proposed school buildings.

The third general meeting was given up to the discussion of "The School in relation to Tuberculosis." Dr. Arthur Newsholme showed that tuberculosis is relatively uncommon at school ages, since the reports of the Registrar General show that it is the cause of death of only seven children per year in every 10,000 children between the ages of five to fifteen, and of these seven only three are pulmonary cases. Comparing these figures with statistics of examination of children in schools, and assuming that there are ten non-fatal cases to every fatal case, Dr. Newsholme reaches the conclusion that not more than one in 300 children in schools shows diagnosable pulmonary tuberculosis. These tuberculous children are not probably to any great extent, a source of infection. It is important that family history as to tuberculosis should be included in the medical schedule card of each pupil. General hygienic improvement of schoolrooms operates to retard the development of latent tuberculosis.

At the general meeting on "School Work in its Relation to the Duration of Lessons, Sequence of Subject, and Seasons of the Year," the papers presented were by Professor W. H. Burnham, Clark University, Professor Chabot Lyon, and Dr. Leo Burgerstein, Vienna. In Dr. Burnham's paper, which in the absence of the author was read by Dr. Luther H. Gulick, the discussion of the concrete questions of period of study and the like was prefaced by a critical estimate of the results thus far obtained in experimental investigations of the nature and laws of fatigue. The methods of the ergograph and æsthesiometer were shown to be valuable only in the hands of a skilled experimenter, working under laboratory conditions. The so-called mental tests of fatigue are really tests of work, but have a hygienic importance. The problem of the physiological basis of fatigue is not yet solved: but whether or not Weichardt has really found an anti-toxin capable of neutralizing the toxin which was apparently demonstrated by Mosso to be the cause of fatigue, Weichardt's theory is one which does not misrep-

resent the problem of fatigue. "The nervous system can adapt itself to new conditions, and healthful habits of work can be developed." The problem of fatigue "is in part the problem of adaptation or immunity." "No student of hygiene can ignore the problem of developing resistance." "The studies of muscle fatigue and of the character of the child's physical organism, indicate that short periods of hard, even violent activity, are normal, and likely to foster development and relative immunity to fatigue; but, on the other hand, that there may be extreme danger in prolonged periods of work without rest." "The outcome of investigation seems to emphasize the pace of work rather than the time spent in study."

Professor Chabot pointed out the difficulty of arranging a programme based on a theory of the rhythm of effort, since the order of subjects has less to do with fatigue than has certain other factors, such as the method and personality of instructors. It is safe, however, to regard abstract subjects as being the most fatiguing. If there are five lessons, three should be in the forenoon. Lessons for children from 7 to 10 years of age should not exceed 15 to 30 minutes; for those of 10 to 14 years, not over 30 to 45 minutes; and after 14 years, not over an hour or an hour and a half.

Dr. Burgerstein suggested the desirability of utilizing, in the study of fatigue, not only the scientific experiments of laboratory workers, but also the results of "empirical trials made in schools by experienced teachers, with lessons of different duration and different sequence of subjects, under careful observation of scholarship." There is a certain danger in shortening the lesson-period where there are many teachers, since each tries to get as much done in a half hour as in the former hour. Lessons requiring exact memory should come in the early morning; lessons requiring good light should not be placed late in the afternoon; two lessons in foreign script should not be given in succession. Physical drill is followed by diminution of aptitude for mental work.

Each of the eleven sections into which the Congress was divided applied itself to a particular department of school hygiene:

Section I dealt with "The Physiology and Psychology of Educational Methods and Work;" Section II with "Medical and Hygienic Inspection in School;" Section III with "The Hygiene of the Teaching Profession;" Section IV with "Instruction in Hygiene for Teachers and Scholars;" Section V with "Physical Education and Training in Personal Hygiene;" Section VI with "Out of School Hygiene—Holiday Camps and Schools, the Relation of Home and School;" Section VII with "Contagious Diseases, Ill-Health, and other conditions affect-

ing attendance;" Section VIII with "Special Schools for Feeble-minded and Exceptional Children;" Section IX with "Special Schools for Blind, Deaf and Dumb Children;" Section X with " Hygiene of Residential Schools;" Section XI with "The School Building and Its Equipment."

It is impossible in this brief notice to attempt a review of all the noteworthy papers read at sectional meetings. The United States was represented by several important papers—on Medical Inspection by Dr. Cronin and Dr. Darlington, of New York, and by Secretary Martin, of Mass.; on Scoliosis, by Dr. Lovett, of Harvard; on Folk-Dancing as an Agency in Physical Training, by Dr. Gulick; and on Hygiene for Teachers, by Dr. Wood, of New York. Special mention should be made of the Presidential Address in Section I, by Sir James Crichton-Browne, which was a scholarly and adequate summary, from the standpoint of the physician, of the ways in which psychology and physiology bear on education. The work of Preyer, Hall, and Sully was commended as enabling the teacher "to watch the building of the mental fabric in its various tiers and stages." The question of the nature of the establishment of associations between neurones was discussed. Though the physical substrate of associations is not fully understood, these associations exist, and it is "to control and regulate these intercommunications, so far as not organically preordained, that education is still somewhat blindly groping its way." The opening up of association routes may be expedited by nutrition and exercise, or retarded by malnutrition or overfunction; it is usually a very gradual process, interrupted by certain cataclysmic upheavals, such as the advent of adolescence.

Dr. M. C. Schuyten, of Antwerp, presented in Section I some results of his paidological investigations, during the last ten years, in the laboratory at Antwerp. Among these may be mentioned the fact that the child's power of giving concentrated attention decreases from January to July and increases from October to December; that fatigue increases from October to July; that a period of slackening in development comes at about six years of age; that in March the muscular force is at its lowest ebb. It is encouraging to know that the recommendations of the laboratory are carefully considered by the Alderman of Instruction.

Miss Alice Ravenhill, Fellow of the Royal Sanitary Institute of London, presented statistics of an investigation into the hours of sleep of 10,000 London school children ranging in age from four to sixteen years. Miss Ravenhill finds that girls sleep more than boys; that all children sleep more in winter than in summer; that the average child sleeps from one to three hours less than he should; that insufficient sleep is due

partly to bad housing conditions; and that parents are largely ignorant of the amount of sleep required by children at various ages.

Professor Frantisek Câda, of Prague, presented a preliminary communication of results from Child Study in the high schools of Prague, consisting of measurements of 397 children; and gave statistics of an investigation into the ability of children to estimate, by sight, sizes and distances and angles.

A very interesting exhibition of school building and furnishing appliances was made under the auspices of the Royal Sanitary Institute of London. It included books and periodicals on hygienic subjects, building materials, ventilating and heating apparatus, drinking fountains, dietaries, clothing, desks, blackboards, fittings for science teaching, games and sports, playsheds, and materials for the decoration of schoolrooms.

THE EDUCATIONAL VALUE OF HUMOR.

By Stephen S. Colvin, University of Illinois.

One of the most striking characteristics of the English miracle and morality plays is the mingling of the sublime and the ridiculous. To us of to-day such a mixture seems incongruous in the extreme, and yet may it not be that the incongruity is in us rather than in the play? It is a characteristic of the literature of cruder times to blend these two seemingly opposite elements, and it is a mark of the greatest literature of all ages to do so as well. Homer and Shakespeare and Balzac, not to mention a score of other great writers, attest the fact that there is a true kinship between humor and the most exalted passions of the human heart. The untutored man feels it, the genius expresses it, but we, alas, of the middle plane have failed to recognize the fundamental truth. So it happens that common sense and psychology alike give but scant recognition to this part of our conscious life.

Doubtless this neglect is to be explained in part by the fact that humor is commonly considered an unimportant element in the practical business of the world, and partly because its subtle nature makes an analysis unusually difficult and unsatisfactory. It seems safe to assume at the outset, however, that humor is to be classed among the emotions. It contains unmistakable elements of organic bodily changes, varying greatly in intensity as they accompany uproarous mirth or delicate satire and word play; it possesses also a distinct perceptual phase, more marked in the higher manifestations of humor than in the majority of emotions, giving it often so predominatingly an intellectual cast as to obscure its rich affective basis; and finally, like all other emotions, it expresses itself in an attitude toward the object that has called forth the humorous experience. Hence a complete discussion of humor should include first, an outline of those elements of perception that constitute the intellectual phases of the emotion; second, an analysis of those bodily changes that accompany its manifestation, and third, a description of those acts that express its attitude toward its object. The present discussion, while recognizing the importance of these various aspects will, however, limit itself for the most part to the first, since it is in relation to the

perception of humor that the principal educational interest in the emotion arises.

It may be said in passing that Sully in his "Essay on Laughter" has described at some length the organic changes accompanying hearty laughter (often an expression of the humorous emotion) as have also J. R. Angell and H. B. Thompson in an article in the Psychological Review, and it may not be without interest to note that in laughter there is a pronounced effect on the circulation, while the general activity of the organism is heightened, making the more explosive types of humor, at least, feelings of euphoria. It is true that in the higher types of humor (and to these alone the name is most commonly applied) explosive laughter is entirely lacking, yet there are doubtless in all humorous experiences certain tendencies, however mild, toward laughter, be they nothing more than the smile of quiet appreciation. Hence it is not unwarranted to assume that organic changes, though in a greatly modified degree, are to be found in the more subtle forms of humor as well as in its cruder expressions. Humor, then, is a pleasurable affective state, and for purely physiological reasons, if for no others, it should be cultivated.

If we turn to a consideration of the intellectual aspect of humor, we are at once confronted with the difficulty of giving an exact characterization of the emotion in terms of perception. We find, for example, Hobbes defining the ludicrous as a conception of superiority and degradation. He says, "The passion of laughter is nothing else but sudden glory arising from a sudden conception of some eminency in ourselves, by comparison with the inferiority of others, or with our own formerly." He then makes the chief element in the emotion egoistic, basing its existence on pride and love of power, thus bringing his conception of humor into accord with his general philosophic theory. Aristotle, too, finds in the ludicrous something base and unworthy, the rejoicing at another's misfortunes, the perception of a defect or ugliness. This general point of view, with certain modifications, is shared by Professor Bain, who, however, does not consider as necessary the egoistic element in the emotion. Another prominent theory is that expressed by Kant, Schopenhauer, and Lipps, among others, who hold that the essential element in all humor is a recognition of incongruity.

While neither of these theories is adequate fully to set forth the nature of humor, the second seems to have a far greater merit. I believe it would be quite impossible to show that all humorous situations exhibit relations of degradation and superiority, and further the extreme view set forth by Hobbes, which makes the emotion essentially egoistic, is clearly with-

out justification. This merit, however, exists in Hobbes's theory, namely that it emphasizes the suddenness of the perception. Sluggish intellects and dull wits cannot grasp an amusing situation. The perception of humor is a sure indication of mental alertness, and here we find an element of significance for education.

On the other hand, I believe it quite within the powers of analysis to make clear that all forms of the comic, the humorous and witty, have in them suggestions of the strange, the unexpected, the absurd, the incongruous, the mal-proportioned.

If we grant that this is the case, however, we must not suppose that the sense of strangeness or incongruity in itself is sufficient to make a humorous situation. To this must always be added the feeling of personal disinterestedness (accompanied by a distinctly pleasurable experience). An object or event to be really humorous must be so in itself, and not because of any relation to the well being of the person who experiences the emotion. In this respect humor closely relates itself to the æsthetic sense, which likewise, as Schopenhauer has pointed out and Münsterberg has affirmed, must be entirely free from personal interest to be genuine. The individual who can laugh at the mishaps of another, but finds nothing humorous in his own trivial misfortunes must raise a suspicion as to the genuineness of his sense of humor. We may safely go so far as to say (paraphrasing the words of Kant in regard to our moral life), "The direct opposite of the principle of humor is, when the principle of private happiness is made the determining principle of this emotion."

Closely connected with this feeling of disinterestedness is the fact that humor extends the sympathies. The self-centered individual can never so divorce himself from a situation as to treat it from a genuinely humorous standpoint. The practical life and the life of mirth exclude each other absolutely. Hence the brute can no more feel the humor of the situation, than he can have an intimation of its ethical significance, its artistic exaltation, or its religious sublimity.

Yet on the other hand, the individual cannot be in a state of marked inferiority and dependence in relation to the object that he finds humorous. This of course does not mean that in the perception of ludicrous relations there may not be one term of great exaltation and the other of weakness, baseness or insignificance, as for example, when some petty being sets himself against an overshadowing power; but it does mean that the person who stands in the inferior relation cannot realize the humor in it, unless perchance, he is able to view this relation from the standpoint of the superior power, thus transcending his own insignificance. Here the humorous emotion runs

exactly counter to the religious, where a feeling of absolute dependence is characteristic of its most profound expressions. Solemnity is always a foe to laughter, and tyrants and school teachers tremble at the manifestations of mirth, the surest indications that they are no longer taken seriously and that their fall is at hand. In this connection Sully says that laughter is feared by those "who hold imposing rank or office and have the daily concern of maintaining a proper awe in others." To laugh at the gods is to depose them. Of all human weaknesses attributed by Homer to the Olympian deities, those qualities which made them the subjects of mirth were the most dangerous to their divinity.

Another characteristic of the sense for the humorous which is important for our purpose to notice is that it involves a relational activity of the mind. The dull person, as has already been said, and the merely emotional person are both incapable of really experiencing the delicious sense of the ludicrous, because both are incapable of forming subtle and far reaching associations on which the higher forms of humor so much depend.

To be aware of incongruities implies an intellect of considerable activity. Even surprise is an indication of mind. It is a well known fact that a considerable period must elapse in the life of the infant before he can find any situation surprising. What is true of the child here is also true of the race. In this connection Herbert Spencer remarks in his autobiography: "Surprise and curiosity are not the traits of the utterly ignorant, as they are commonly supposed to be, but of the partially cultured. . . . . He (primitive man) does nor concern himself about them (great natural changes) any further than as they affect satisfaction of his material needs." Such a mind evidently would possess little capacity for humor even of the crudest type.

Beside being of a disinterested nature and possessing a broad intellectual basis, the sense of humor has, as Sully points out, a social value. It binds those of common taste together, but is the foe of the barbarian and the stranger. It is opposed to vice, for vice is folly and folly is ludicrous. Because of this, satire has been one of the most valuable instruments in social reform. Many a man is willing to be known as a knave, but few indeed relish the rôle of the fool. "The fear of becoming ridiculous," says Sully, "is a valuable side support of what we call moderation."

In its highest expressions humor becomes a philosophy. Its disinterested character raises it above the view of the crowd, frees it from the trammels of the present, and allows a prospect of the universe *sub specie aeternitatis*. The quiet smile, free

from contempt and tinged with pity, which the face of the philosopher wears, is expressive of a mind that, while sympathizing with the shams of life, has seen through them and has realized, not with bitterness and scorn, but with deep comprehension and tenderness, the trivial character of mere human strivings. The true philosopher is neither an optimist nor a pessimist; he is a humorist.

Enough has been said of the far-reaching importance of humor in our intellectual, moral, social, and contemplative life to justify it as an end in education. Its possession means intellectual acumen and breadth, a sense of ethical values, and exalted spirit. To educate in humor is to furnish a liberal training; to humanize. The teacher can have no higher ideal than that of teaching his pupils to laugh aright; for he who laughs well laughs wisely, laughs magnanimously, laughs highly. He who laughs well has knowledge, sympathy and philosophic calm. His faculties are balanced and his soul at peace. The tittering school girl and the boisterous youth should be purged of their follies. They have learned to laugh, but how unwisely! The sober-faced "school-marm" fears their shallow mirth, as indeed, she should, but she should recognize that she cannot escape it by banishing all fun, however trivial and vulgar, from the lives of her pupils, but by reforming their sense of humor; then it will become her ally and no longer remain her foe. It is high time that the unnatural seriousness of the schoolroom should be at an end. The best school government must be that which makes some concessions to child nature. The average boy and girl have, I believe, a fund of crude humor. Yet the school goes on ignoring this truth until most pupils imagine that all thoughts of fun should be abandoned on entering the schoolhouse. This fact was brought to my mind rather strikingly on one occasion, by a question asked by one of the boys, when a set of compositions, all on humorous topics, was assigned to a group of high school children. "How can we," he asked, "write on these subjects; can we say anything funny?" I really think the pupil imagined it was little short of a crime to introduce a bit of humor into his school work, and I fancy his conclusions were drawn with some degree of logic.

We have long been striving in our schools for subjects that would best prepare the pupil for the battle of life. We have mathematics and foreign language to give rational power, nature study to strengthen observation and accuracy of description, literature to teach humanity, and history to promote good citizenship. Yet the opponents of formal discipline tell us, and perhaps with justice, that we fail for the most part to attain our aim, since we cannot train the intellect as a whole,

but only in definite directions. I venture to assert, however, that a training in the perception and enjoyment of humor would do much to equip the individual with a mind many sided to meet the various caprices of fortune with intelligence, fortitude, humanity, and if need be, with resignation.

In this training literature has a part of the greatest importance to play—but I fear that it is far too seldom utilized. What a store of treasure there is drawn from all ages and peogles! Are there not Homer and Aristophanes, Chaucer and Shakespeare, Moliere and Rabelais and Cervantes, Sterne and Fielding and Burns, Balzac and George Eliot? All great writers have felt in some degree the power of humor, yet how seldom has this side of their writings been fully comprehended.

Education in humor is not alone a matter for the schools, yet it should begin in the schools. It has often been said that children are lacking in humor. This I am sure is untrue, unless we are to understand by this statement that their notions of humor are crude and inadequate. So, too, are their logical powers deficient, and their moral judgments narrow, their æsthetic sensibilities crude, and their religious instincts savage. Observation and experiment disclose unmistakable evidence of the existence of the sense of humor in very young children and of its evolution from a lower to a higher stage. The cruder elements find their expression in a fondness for the absurd and strange in teasing and bullying, in tricks and practical jokes. The higher elements show themselves in unexpected turns of thought, such as stories with a point, repartee, quaint sayings and epigrammatic statements, but these more subtle elements are far outbalanced by the grosser. It is further clearly evident that though there is a gradual growth in the humorous elements, it by no means keeps pace with the growth of other important elements in the child's mental evolution, a fact to be explained largely, I believe, on the ground that humor has never been seriously considered as worthy of cultivation on the part of teachers and educators in general.

The crudest of all elements entering into humor is without doubt the teasing and bullying instinct, common to both sexes, but particularly exhibited by boys. So obscured is the genuinely ludicrous element in this tendency that it is often difficult to distinguish it from a similar instinct to be found in the brute. Here the "sudden-glory theory" of Hobbes may seem to find support, but I am inclined to believe that in the proportion in which a love of power and a feeling of superiority manifest themselves in this instinct, to just that extent is the germ of humor lacking. The playing of practical jokes, the "calling of names," the various physical tortures that annoy the victim of this sort of play activity, possess humorous

attributes only in so far as they exhibit incongruities. That this first and lowest type of humor, however, finds a large place still in the estimation not only of children, but of "grown-ups" as well, the comic supplement of our Sunday papers and the programmes of our vaudeville theatres abundantly attest. This is what the famous clown, "Silvers Oakley," says in regard to the humor of the crowd as reported in a recent issue of an American daily: "When I get through my work I feel as if I'd been playing centre scrimmage against Yale. If people only would laugh at something nice and kind and gentle! But no! We have to kick and get kicked, punch and get punched, get up, fall down, roll around, and get generally walked all over, trampled under and hoofed up, to make any sort of a hit at all. Well, honest now, I had a partner that got only one good laugh all the time he was in the business, and that was when an elephant stepped on his foot and smashed it flat. He set up a screech that slit the tent-top pretty near, and they laughed! Gee! you should have heard them laugh! When we carried him out, groaning and biting his fingers, they almost had a fit."

It is the crude instinct that education should utilize in order to transcend it and attain higher levels. To ignore it or to attempt to eradicate it without substitution is to cut off all hope of developing a real sense of humor. We can reach the mountain tops only by first traversing the plain and the foothills.

Closely connected with the humor existing in the rough horse play we have just been discussing is the ludicrous side to play in general. It seems quite possible to regard humor as originating in the universal play instinct, of which teasing and bullying may be regarded as a special type. Significant in this connection are the words of Groos, who, in preparing his great work on "The Play of Animals," consulted a mass of literature from all sources. "I have examined many books of travel," he writes, "but usually with discouraging results. If they refer to the play of animals at all, the most they say is that it was 'amusing,' or 'astonishing,' or 'droll,' or exceedingly 'funny.'"

For the savage and the child everything that is new and strange is greeted either with signs of fear or with laughter. The peculiar dress and the language of the rustic and farmer, are still stock elements in the comedy which delights the crowd. Once more, we find genuine humor mingled with much that is undesirable; for to evince mirth at strange manners or customs is a mark of provincialism and is not on the whole to be encouraged. Here, again, the progress of educa-

tion from the lower to the higher forms of humor is not by elimination, but by substitution.

The higher types of humor which depend on sympathy must come in to take the place of these cruder instincts, and when this is accomplished the true educational value of humor is seen. It becomes then as broadly humanizing as is morality, or art, or religion. It then takes its proper place among those forces which combat the mere animal tendencies of struggle and strife, of self aggrandizement at the expense of others. It, too, makes for the 'sweetness and light;' it, too, transmutes the biological laws of the struggle for existence, and the survival of the fittest from base metal into noble coin; it, too, has seen the horizon from the mountain tops and cannot dwell content within the confining narrowness of the valleys. No one can be both humorist and egoist in the same breath. No one who has a sense of the ludicrous can believe his own little affairs of supreme importance. It is a significant fact that Napoleon had no sense of humor. Like many a less gifted person, he took himself all too seriously and he met defeat. We are all familiar with the representative of that modern type of humanity—the product of "up-to-date" Americanism, who "does things," but in the doing forgets there is a world outside his own sphere of activity, who has no time for book, or friends, or worship, or art; who knows no language but that of the shop, who, in the mad rush for fame, or power, or fortune, has no leisure for the higher things. He is in need of culture, and I know of no culture more beneficial than that which would enable him to see his true relation to the world under the guise of humor. Humor furnishes a vacation from seriousness—a vacation that the present age sadly needs. Not that activity and struggle should cease, but that they should be given their proper place and their just proportion. This an education in humor should accomplish; and thus the Greek virtue of *sophrosune* may be made a part of our lives.

LITERATURE.

Der Einfluss der Blutsverwandtschaft der Eltern auf die Kinder, von Dr. E. Feer. S. Karger, Berlin, 1907. pp. 32.

Consanguinity of parents *per se* perhaps exercises no unfavorable influence upon children. So at least Feer[1] argues. From a summary of the copious literature and statistics upon the subject, it appears that only in retinitis pigmentosa, congenital deaf muteness and possibly in a few other diseases can a predisposing cause be traced to the blood relationship of parents. Of course parents who are relatives are more prone to the same diseases or more likely to be exposed to untoward external influences, and it is to these that the deleterious effects of the marriage of relatives is to be chiefly ascribed. There are many cases of children of consanguinous parents who are normal in all respects through life. Enthusiasts for race improvement have often urged legislation respecting the degrees of relationship within which marriage should be allowed, but as the evils of inbreeding are insignificant in comparison to those arising from the intermarriage of consumptives, syphilists, deaf mutes, insane and alcoholic, restriction laws, if any are to be enacted, should begin with these latter. Many authors urge that human inbreeding tends to reinforcement and potentialization of heredity in certain directions and to diminish not only variation but energy in others so that new blood is needed for new combinations. If and so far as these accented qualities are good, wholesome variation may result. The problem is best studied among animals and plants which breed more rapidly than man, and here full blooded stirps often thrive for many generations with not only inbreeding but even with incest. Thus more or less stable race constants may arise and fertility as well as hereditary effectiveness may be augmented. But beyond a certain very variable point, degenerative processes develop yet more rapidly and decadence results so that crossing brings wholesome reconstruction. Both primitive and transition races seem most immune, while with those that are civilized bad results appear sooner. Reibmayr[1] urges that human culture has been very dependent upon, limiting both by culture and by law the racial range of intermarriage, and if the latter be freely contracted with members of lower stirps, progress is arrested. Not only caste, but language and religion have set up wholesome barriers. Bees and ants owe their high instincts to inbreedings. Yet if restrictions are narrow or too long continued, rigidity and stagnation result. Then crossing with vigorous but less developed stock brings new life. Once hereditary disease was far less than now, so that the rhythm of the three stages, inbreeding and progress, stagnation, mixture and renewed progress followed each other with less rapidity than now. Among the ancient Persians, Egyptians and the Incas of Peru brother and sister, father and daughter, mother and son, married with impunity, and the last of the Incas is said to have been the fifteenth generation of marriage with a sister which was prescribed. Lorenz is inclined to think that this worked very favorably for ennobling the race under the conditions that ex-

[1] Inzucht und Vermischung beim Menschen. Leipzig und Wien, 1897.

isted then and there. For determining the optimal degree of relationship that is favorable, of course we have no norm. In many statistical studies important data, even the degrees of relationship, are often omitted. One of the best of these by George Darwin[1] in which the results of the marriage of sisters' children appears, shows but surprisingly little deleterious effect. The best data are from the studies of special diseases; but often here methods are still unsatisfactory and consumption, *e. g.*, is so very prevalent everywhere that it is difficult to obtain a reliable basis of comparison. The best of all recent studies are those by Mayet[2] who compiled his data from 150,000 inmates of Prussian institutions and who showed that for even such diseases as simple insanity, paralysis and epilepsy the effect of the consanguinity of parents was extremely slight, if indeed it was a factor at all, although for imbecility and idiocy a slightly better case was made out. Even though we may doubt the full effects of consanguinity *per se*, such marriages are, in fact, usually unfavorable and may be highly so in civilized lands to-day because they involve a greater liability to similar deleterious circumstances, while mixtures tend to eliminate hereditary effects, for we cannot escape the fact that in a general way destiny is ancestry.

Die körperliche Misshandlung von Kindern durch Personen welchen die Fürsorgepflicht für dieselben obliegt, von PFARRER A. WILD. Rascher & Co., Zürich, no date, pp. 162.

Wild, in a laboriously compiled essay crowned with a prize by the University of Zürich, collects a most painful anthology of the mistreatments of children in the past and present; how the Roman father sometimes sold and could even slay his offspring with impunity; how infants have been butchered wholesale even in the cradle in times of war, and orphans, waifs, paupers and the sick and unprotected have suffered; how children have been exposed, tortured, burned as witches or to compel confession, hung up by the limbs for a long time, worked to death, flogged, clubbed, and in some cases killed by angry pedagogues (one of whom left a record of having inflicted over 64,000 blows with the rod), together with many other forms of punishment. Some of these tortures to which children have been inflicted in ancient times are too inhuman to report. Then follow many specific cases of cruelty from court records of children whose parents or guardians broke bones, cut off eyelids, mutilated and mistreated in horrible nameless ways, of children stolen by beggars and made cripples to excite pity as they begged, cut and blistered with blows, sexually outraged, hair pulled out, starved, enslaved under farming out systems, killed at birth when illegitimate to conceal the parents' shame, left in filth, covered with vermin, tied and shut up in darkness, cold and without food or clothes, made to eat insects, offal, and done to death in every conceivable way. From these horrible details the author classifies the causes of cruelty to children in the following order of importance, anger, hate, greed, alcoholism, Old Testament ideals, and psychic morbidity. Illegitimate children suffer most. Instead of this martyrdom the author would forbid all corporal punishment, both in home and school. After giving a digest of laws upon the subject and describing in a concise if somewhat imperfect way child-saving and protecting organizations and institutions in Germany, Austria, Italy, the United States and Switzerland, he presents a programme for the future designed to safeguard every child

[1] Die Ehe zwischen Geschwisterkindern und ihre Folgen. Leipzig, 1876.
[2] Jahrb. d. internat. Vereinigung für vergleich. Rechtswissenschaft, etc., Bd. 6, Berlin, 1903.

from cruelty, neglect or exploitation which shall encourage and not supplant private initiative. Patrons, inspectors and guardians should not only enforce the law but encourage all existing institutions to do their utmost, and should stimulate charity in all possible ways and favor the organization of new institutions, some of which are now necessary. All this work should be organically connected with that of public education. Court sentences for cruelty should be heavier and family relations should be everywhere approximated in the public care of children. Norms are given for the families into which such children are entrusted. Childless parents and orphans seem providentially provided for each other. The juvenile court is the chief contribution of the United States to this subject.

Gesammelte Abhandlungen zur Sozialpädagogik, von PAUL NATORP, *Erste Abteilung: Historisches*, FR. FROMMANNS VERLAG. Stuttgart, 1907. 510 p.

Contents:

I. Platos Staat und die Idee der Sozialpädagogik. II. Condorcets Ideen zur Nationalerziehung. III. Pestalozzi unser Führer. IV. Pestalozzis Ideen über Arbeiterbildung und soziale Frage. V. Pestalozzi und die Frauenbildung. VI. Pestalozzis Prinzip der Anschauung. VII. Herbart, Pestalozzi und die heutigen Aufgaben der Erziehungslehre. VIII. Kant oder Herbart. IX. Neue Untersuchungen über Herbarts Grundlegung der Erziehungslehre.

Professor Natorp, the eminent German pedagogue, whose "Sozialpädagogik" has been called the classical work in German social pedagogy, has at present probably the largest following among German sociologists. The editions of several of his principal works have been so quickly exhausted that the present attempt to publish the more important of his writings collectively seems not at all surprising.

The first volume which has just appeared, as its contents indicate, is a collection of his historical investigations. Aside from their scientific value they are of special interest because they obviously constitute the background in which Natorp's social pedagogical views germinated. The influence of Kantian thought on his philosophical foundation of pedagogy is easily recognized. As a matter of fact, in the Kantian maxim, "always act so as to use humanity, in thy own person as well as in that of others, as an end and never as a means," Natorp thinks we must acknowledge the solution of socialism as ethical idea. His demand for a national school points back to Plato and Condorcet. In Plato's social pedagogical conception of the state we have, accord- to Natorp, the classical view of that indisputable truth "that while community, on the one hand, presupposes human culture and is conditioned thereby, on the other hand, community conditions and determines human culture." The school, so to speak, is the state on a smaller scale and thus serves the purpose of accustoming the pupil to the social orders. For that reason the school must appropriately conform to public life and be organized accordingly, that is to say, as a national school. From this principle the whole content and method of school education can be derived.

Pestalozzi has been to Natorp a seemingly inexhaustible source of inspiration. It is due perhaps to no small extent to his Pestalozzian studies that the world to-day begins to appreciate the magnitude of Pestalozzi's pedagogical insight; the fact that his real greatness rests in the socialistic spirit of his pedagogy, in his recognition of the close connection between the social problem and true human culture, and at a time when a social problem did not even exist, or rather when it had hardly risen above the threshold of human consciousness. In

No. IV, for instance, Natorp's views are principally based on Pestalozzi's "Meine Nachforschungen über den Gang der Natur in der Entwickelung des Menschengeschlechts," a work which Pestalozzi himself judges very severely and which to his contemporaries remained a book with seven seals. But, writes Natorp, in radical acuteness this work comes up to Rousseau, in depth of conception, in power of abstraction and in philosophical insight it surpasses him. The development of merely social to ethical right; the gruff declining of all philanthropy in the form of alms and hospitals, by which right "is buried in the dung-pit of mercy;" the social political and social pedagogical import of physical work in the community; his religion, which is "nothing else than the divine spark of my nature and my power to judge myself within myself,—to condemn and to absolve;" all this acts, in the prophetic poetry, and force and depth of foresight, as one great appeal to the present age.

While seven articles of this collection are reprints, two are new publications:

(1) No. VI, "Pestalozzi's Prinzip der Anschauung." Herein, after reviewing several Pestalozzian writings, his plea is to judge him not by the later works of a weak and broken down old man, but by the views which he entertained in the days of Stanz and Burgdorf. The second and third chapters tend to establish Pestalozzi as an original thinker and relatively independent of Rousseau and Kant.

(2) No. IX is essentially a continuation of Natorp's polemic against Herbartianism. He merely supplements and completes here his previous discussions of Herbart's views and at the same time defines more clearly his own. M. W. MEYERHARDT.

J. G. Fichte's Sozialpädagogik, von S. HIRSCH GUTMANN. Scheitlin, Spring & Cie, Bern, 1907. 100 p.

Fichte usually receives scant justice in histories of pedagogy, probably because it is commonly supposed that his pedagogical ideas are contained only in his earlier writings and chiefly in his "Addresses to the German Nation." As Dr. Gutmann, however, points out, Fichte's works throughout are interspersed with pedagogical and social pedagogical suggestions. To present these in perspective is obviously the aim of the present pamphlet and this purpose may be said to have been most successfully accomplished.

After tracing the history of Sozialpädagogik and discussing the array of eminent men of the 18th century with pronounced social pedagogical tendencies, the writer dwells at some length on Pestalozzi as Fichte's immediate predecessor. Between these two he not only establishes several points of connection, but also many differences, and concludes his discussion of their relation by expressing the opinion that, notwithstanding the great influence of Pestalozzi on his thoughts, Fichte never was a mere disciple of the former, or if a disciple, only in the sense in which Nietzsche says that "every master has only one, and that one must become unfaithful because he is destined to mastership himself."

Turning, next, to Fichte's views, he classes the plan developed in his "Addresses to the German Nation" as "elementary Sozialpädagogik," as opposed to everything else from his pen which as "Sozialpädagogik for adults" is Sozialpädagogik in the proper sense of the word. Particularly during his first period, when he is still purely Kantian and as such looks on education from a cosmopolitan point of view, are his doctrines fully and wholly social. Compared with this standpoint his later nationalism is to be regarded as more or less of a contraction.

The discussion in detail is divided into the following chapters: The

Scholar as social pedagogue, Nature and tasks of the Scholar, The Scholar as ruler, and his duties, Nature and duties of public officials, Religion as an educational institution and its leaders as popular teachers of morals, The artist as social pedagogue, Universities as educational institutions, University Seminaries, Classification of students, Social pedagogy from the standpoint of Fichte's philosophy of rights.

M. W. MEYERHARDT.

Pupil Self-Government, Its Theory and Practice, by BERNARD CRONSON. The Macmillan Company, New York, 1907. pp. 107.

This work treats first the genesis of the movement and the causes of its success and failure and its relations to the teachers. Obedience as its means, apperception its method and life activities its material. As to conditions, there must be a proper ideal, competent principal, and teachers, gradual introduction of the scheme and power to enforce it. Another chapter treats of the immediate preparation, the preamble and charter. Another discusses legislative, executive and police departments, the mayor and the various squads and assembly, truant patrol. Then comes the department of health, savings, education and judiciary. The scheme in perfection is seen in morning assemblies, courts and in truant cases. Another chapter discusses the ethics of the movement, its relations to life, at home, out-of-doors, in school, to individual welfare and its influence in enforcing obedience to law, its relations to citizenship, common welfare, the government, and especially the rise of representative government, are treated, and there are eight full-page illustrations and plenty of blank sheets for notes.

A History of Commerce, by CLIVE DAY. Longmans, Green & Co., New York, 1907. pp. 626.

The first part, after some general expressions on ethical obstacles, risks and political restrictions, treats of the oriental period, Egyptian, Phœnician, Assyrian, Persian, Jewish, etc. Then follows the Christian period, then the Roman. Mediæval commerce begins with about the year 1000 and trade in town, on land, in fairs, by sea, the Levant trade, commerce of Southern and Northern Europe, the development of mediæval organization and commerce and politics and the later Middle Ages. Part third, the modern commerce, begins with the history of exploration and discovery, then the development of economic organizations, credit and crises, the modern state and the millenial system, Spain, Portugal, Netherlands, England, commercial development, exports and imports, shipping policy, France, Germany, Italy, and minor States. Part four, on recent commerce, discusses its relations to coal, machinery, manufactures, railroads, navigation, the wares of commerce, its policy, the modern organization, England's commercial development down to 1900, reform of commercial policy and then a survey of each of the European countries. Part five begins with the United States since 1789, treating first the organization of production, then internal trade, foreign commerce, policy, national expansion at its various periods, exports, imports, the direction of commerce, national development, the direction of commerce down to 1900.

Hygiene of Nerves and Mind in Health and Disease, by AUGUST FOREL. Science Series. Authorized translation from the second German edition by Herbert Austin Aikins. G. P. Putnan's Sons, New York, 1907. pp. 343.

Our mental life, according to this author, is an expression of a brain life, and hence all phenomena must be considered from the point of view of brain hygiene, while social hygiene and ethics are more special. Popular hygiene should enable an intelligent layman with a fair

education to so govern his life as to avoid disease and abnormality for himself, his fellowmen and his offspring, and to promote the health and strength of all in every way. Hygiene should not supplant the work of the expert physician, although it should make the occasions of his assistance as rare as possible. Hygiene, where it is not understood, may do great harm. With this premise, the author treats of brain and nerves, their physiology, anatomy, relations to mind, race history, mental and nervous pathology. Part second treats of pathology of nervous and mental life, together with abnormalities and various disturbances, while the third part discusses nerves, hygiene in general, inheritance and also childhood and pedagogy are included in his comprehensive survey.

Plant Anatomy from the Standpoint of the Development and Functions of the Tissues; a Handbook of Micro-technic, by WILLIAM CHASE STEVENS. P. Blakiston & Co., Philadelphia, 1907. pp. 349.

This book makes the subject of plant anatomy indeed a rich and alluring field because it reveals how, under exacting conditions, plants have met and solved the problems of their existence by achieving the power and habit of cell differentiation and association into tissues and in many other ways. It is indeed true that every student of anatomy works "at distinct disadvantage if he is not constantly reverting for enlightenment to questions of origin and function and he will find the outcome of his work more worthy of his efforts if he has sought out the physiological impression of his anatomical finding." This book attempts to show how plants triumph over the conditions and forces that make up their environment, and thus come to achieve by evolution of the different physiological tissues their various systems. Thus the work falls into the following chapters: The plant cell, differentiation of the tissue, secondary increase in thickness, protection from injuries and loss of water, the plant skeleton, the absorption of water and minerals, circulation of water and soil solutes, intake and circulation of gases, construction of the plant's food, its circulation throughout the plant, storage of food and water, secretion and excretion, preparation of sections, use of the microscope, micro-chemistry of plant productions, defections or adulterations in foods and drugs.

Telling Bible Stories, by LOUISE SEYMOUR HOUGHTON. With introduction by Rev. T. T. Munger. Charles Scribner's Sons, New York, 1905. pp. 286.

This very interesting work is made up of chapters entitled The Old Testament and the Child, The Morning Stories, More Morning Stories, Before the Flood and After, A Patriarch Story, Other Patriarch Stories, Hero Tales, Romance Stories, Purpose Stories. The authoress does not attempt in this volume to give stories, but rather to characterize them and to tell the spirit and method with which they should be told to children of different ages. For the lowest classes all should be mere narrative, of course, the ethical beginnings to come out later. Progress is described as from the method of the historian McMaster up to the method of John Fiske, the latter being more interested in the ideas than in the facts. It is difficult to give an adequate idea of this very suggestive book, the merits of which will come out most clearly when a teacher has occasion to actually do this work.

Administration and Educational Work of American Juvenile Reform Schools, by DAVID S. SNEDDEN. No. 12. Columbia University Contributions to Education, Teachers' College Series. New York, 1907. pp. 206.

This is a particularly timely monograph. The author states the

scope of juvenile reform work and then its history is traced from its early state in 1850, its relations to the State, present scope, distribution, teaching force, the educational work of reform school, its general aspects, classification, ideals and practices of vocational training, the merit system, military discipline, punishment, religion direction, reform school parole system, relations to probation, different ways of estimating the result, possible lines of future development, training of teachers for reform school work, the failure of the public schools to learn the lessons from this field.

The New Earth. A recital of the triumphs of modern agriculture in America, by W. S. HARWOOD. The Macmillan Company, New York, 1907. pp. 378.

This book is one of unusual interest to every one interested in crops, soils and products. Perhaps the salient heads of chapters may indicate sufficiently its scope. They are: the brain of the earth, the soil inoculation, plant development, the enemies of plant life, the weeds of the earth, Luther Burbank, the progress of horticulture, progress of modern forestry, dairying and animal husbandry, reclaiming the earth, the foundation of the new earth, selling the surplus, experimental stations, agricultural education, national aid, importance of the farm.

Landmarks of Scientific Socialism "Anti-Duehring," by FREDERICK ENGELS. Translated and edited by Austin Lewis. Charles H. Kerr & Co., Chicago, 1907. pp. 266.

When in 1875 Duehring, then a privat docent in the University of Berlin, announced that he had become a convert to socialism, he was not content to take the movement as he found it, but worked out a theory of his own and finally became the originator of a new social philosophy based upon natural philosophy, morals and law and worked out with a good deal of semi-Hegelian dialectics. This book is an attempt to orient the student in scientific socialism not bound up in any particular scheme to accept the name of the author, Engels himself, who has been for many years prominent in the German movement.

The New Basis of Civilization, by SIMON N. PATTEN. The Kennedy Lectures, 1905, in the School of Philanthropy conducted by the charity organization society of the City of New York. The Macmillan Company, New York, 1907. pp. 220. (American Social Progress Series.)

This work is designed to contribute something to explain to students how the problems of American social life have arisen in large cities, and to expose to them the newer thought based upon science. The various chapters here are upon the basis of resources, the basis of heredity, the basis of family life, the basis of social classes, the basis in social consciousness, the basis in amusement, in character, in social control, the new civilization, the programme of social work.

The Theoretical System of Karl Marx in the Light of Recent Criticism, by LOUIS B. BOUDIN. Charles H. Kerr & Company, Chicago, 1907. pp. 286.

It was very well to have Karl Marx epitomized concisely, in lucid language, and his relation to his later critics and to the old and new materialistic conception of history and class struggle set forth. This the author has attempted to do, and puts his own view in the position of a keystone to the arch and pronounces the whole "a monument of the greatest thinker of the nineteenth century and the beacon light to struggling humanity."

The Shame of the Colleges, by WALLACE IRWIN. The Outing Publishing Company, New York, 1907. pp. 159.

This showy little booklet is a spritely representation, or rather caricature, of present college life at Harvard, Vassar, Princeton, Chicago, Yale and West Point. The author has evidently studied up the history and knows something of the student life in all these places, and holds it up to ruthless satire.

The Boy Problem, by WILLIAM BYRON FORBUSH. Sixth edition, rewritten. The Pilgrim Press, Boston, 1907. pp. 21.

This valuable and interesting book has met with gratifying success. It first studies development and especially the social development of the boy, mentions some exceptions to and limitations of generalities about boys, the ways in which they spontaneously organize socially, a new study of gangs, and child societies, social organizations formed for boys by adults, a critique of boys' clubs and church work for boys and suggestions how to help them, and the boy problem in the church and in the home.

An Elementary Treatise on Theoretical Mechanics, by J. H. JEANS. Ginn & Company, Boston, 1907. pp. 364.

This book offers a one year's course for beginners, and deals with the laws of motion, statics, dynamics, of a particle and of rigid bodies. The aim is to elucidate physical principles rather than mathematical theory. The principles are illustrated by practical applications and the mathematics is happily reduced to a minimum. Many typical and representative problems are inserted for solution by the students.

Specimens of Modern English Literary Criticism. Chosen and edited with an introduction and notes by William T. Brewster. The Macmillan Company, New York, 1907. pp. 379.

Fifteen specimens are chosen including Masson on DeQuincey, Sam Johnson on the Metaphysical Poets, Macaulay on Montgomery, Pater on Wordsworth, Robertson on Poe, Dryden's Preface, Harrison on Ruskin's prose, Lamb on Shakspere's tragedies, James on the art of fiction, Coleridge on poetic power, Shelley on the diffusion of poetry and all of these are furnished with notes, questions and references and the whole is given a good index. I suppose we may fairly assume that the author of such a text-book believes that it is well that students should sometimes read books on books before they read the latter.

The Epic of Paradise Lost. Twelve essays by MARIANNA WOODHULL. G. P. Putnam's Sons, 1907. pp. 375.

Why Milton wrote an epic is the theme of the introduction. Then follow chapters on what is an epic, the Christian epic, the principles of Christian doctrine, other versions of man's fall, his fall in tragedy, Lucifer's fall, what Milton really achieved in Paradise Lost, the epic, sources of the lyric, etc.

Selections from Poe. Edited with biographical and critical introduction and notes by J. Montgomery Gambrill. Ginn & Company, Boston, 1907. pp. 200.

Poe has been discussed so much that high school pupils no doubt approach the study of his works with some prejudice. He is so subjective to and his writings so closely connected with his critical theories. Hence the long introduction, to show that the stock criticism of his poetry and that his vague instinct are void of ethical thought or content is false in a measure. His themes are chiefly death, ruin,

regret or failure. His verse has perhaps the most music in the language and is full of a haunting and almost magical melody. He certainly anticipated many theories of the nature and function of verse, especially that of the French instrumentalists. On the whole, we are inclined to think that the apology of Poe and the defence is sufficient and that at least the works here presented should have a place in the school.

Selections from Byron. The Prisoner of Chillon, Mazeppa and other poems. Edited with introduction and notes by Samuel Marion Tucker. Ginn & Company, Boston, 1907. pp. 101.

Nearly one-third of this volume is taken up with the introduction, showing his place among the poets of the world, criticising him as lyrist and satirist, relating him to other British poets, discussing his influence, lack of dramatic talent, his theme, diversity of opinion and giving a pretty full account of his life.

The Optimist's Good Morning, compiled by Florence Hobart Perin. Little, Brown & Co., Boston, 1907. pp. 379.

This suggests that its origin may have been the desire in the family of a liberal clergyman to re-establish a new kind of daily family devotion. These are best adapted for breakfast. There are quotations for each day from the great masters of thought and then prayers from devout men of all religions. The latter are in a purely optimistic spirit. A page is given to each day of the year.

Larger Types of American Geography. Second series of type studies, by A. McMurry. The Macmillan Company, New York, 1907. pp. 271.

This is an attempt at a rather systematic study of the following topics: The Appalachian Mountains, the Rocky Mountains, the Pennsylvania Railroad, the first Pacific Railroad, the Mississippi River, the iron and steel business, the cotton mills and cotton manufacture, and New York City. The work is fairly well illustrated and is a marked addition to the method of studying geography which it advocates.

Japanese Rule in Formosa, by Yosaburo Takekoshi. With a preface by Baron Shimpei Goto. Translated by George Braithwaite. Longmans, Green & Co., New York, 1907. pp. 342.

The writer first gives a brief survey of Japanese successes and how the administration of the island looks from the legislative standpoint. Then he glances to the Formosa of the past under the pirate Dutch, Koxinga, Chinese, etc. Then he describes the geography of the plants, animals, climate, inhabitants, treats of real estate and tenant's rights, finance, economics, police, the monopolies of opium, salt, camphor, minerals, law courts, future development and resources, the savages, tea, sugar, rice, harbors and shipping, foreign trade, sanitation, religion and philanthropy.

Pädagogisches Neuland, von Ernst Kentz. Salle, Berlin, 1907. pp. 172.

This book hardly bears out its title of a newly found pedagogical land, for it consists of four lectures and papers on various occasions from 1894 to 1906. The writer discusses propositions to increase educational efficiency, the influences that inhibit activity in school children, morals and school piety, school physicians, formal grammatical versus real culture, mother tongue, etc.

Die soziale Hygiene, von ADOLF GOTTSTEIN. Vogel, Leipzig, 1907. pp. 72.

This is a convenient conspectus of the methods, problems and goal of social hygiene. The writer begins with its foundations and then considers the statistical method, then the medical, and later applied statistics. He then passes to anthropometry and epidemiology and the larger problems of social hygiene.

Über Colonialwesen, von C. H. R. GROTEWOLD. Moritz, Stuttgart, 1907. pp. 248.

This work is divided into two parts. The first is general and treats of the historic development, purpose and kinds of colonies and then takes up the early history of German colonial politics and administration, the significance of colonies for domestic and for national economy, their relations to the problems of defence. The second or special chapter is devoted to the various German colonies, not only Togo and Kamerun, but German Southwest and Eastern Africa, New Guinea, Marshall Island, Samoa, and Kitschou.

Psychologische Probleme, von THEODOR EICHBERG. Strecker & Schröder, Stuttgart, 1907. pp. 103.

This we believe a prentice hand that is trying its strength by grappling with the problems of freedom of the will, effect of hope and dismal states of mind, the laws of pedagogy, heredity and environment, public opinion and thought. It is naïvely labelled "An attempt at a practical psychology." It seems to us interesting.

Burt, Markham Primer, by M. E. BURT and C. MARKHAM. Ginn & Company, Boston, 1907. pp. 119.

The illustrations in this book are to be recommended for the character especially of animal pictures selected. The anthropomorphizing of the animal world is good pedagogy for childhood. The outlines, too, of most of the pictures are bold and strong, which is another good feature. Color is almost entirely lacking, and should be more in evidence for primary children. The plant pictures have perhaps too much fine detail for young children's eyes; and it would be much better to have these larger (full page) and in natural colors. The half tone copies of masterpieces are unnecessary in a child's book, not only from the character of the printing, but from the fact that æsthetic appreciation of such art has not awakened at so early an age.

J. W. HARRIS.

As You Like It. (The New Hudson Shakspere.) Introduction and notes by Henry Norman Hudson. Edited and revised by Ebenezer Charlton Black, with the co-operation of Andrew Jackson George. School edition. Ginn & Company, 1906. pp. 152.

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